THE IRON TRADE REVIEW

VLOUME XXXIX | CLEVELAND, MARCH 8, 1906 | NUMBER 10

VERY HEAVY

IS CONSUMPTION AS WELL AS PRODUCTION OF PIG IRON.

Demand for Finished Materials Well Maintained.—Corporation Again Buys Bessemer.—Bridges for Japanese Government.

The long continued mild weather has been very favorable for both production and consumption of pig iron. All foundries have been very busy, and current orders for foundry grades indicate that buyers are melting more than they expected. Furnaces are, however, producing more than was anticipated, and no difficulty is experienced in meeting the demand. The market for southern iron is not so strong. The furnaces are showing a disposition to lower quotations at least to the amount of the additional freight rate of 25 cents, which became effective March 1, and, in a few cases, on very desirable business, $13.75 Birmingham for No. 2 has been shaded. The United States Steel Corporation has taken all of the Bessemer which the Bessemer Association had to offer for March delivery, about 7,000 tons, and is expected to come into the market again at an early date. The Cambria Steel Co. has purchased 3,000 tons of basic at $17.00, and other inquiries are pending. The amount of basic available for the first half is not large. The lower grades of pig iron, especially in the south, are the weakest. It is now announced that the Steel Corporation will not be a seller of ferro-manganese.

Crude Steel Is Scarce. The production of crude steel is not equal to the demand, and the price of billets is advancing. Sheet bars and rods are very scarce, and many mills are finding difficulty in meeting their demands.

Ship Building Deferred. The American Shipbuilding Co., which recently placed an order for 14,000 tons of plates for three vessels, has decided not to build the vessels this year, and the South Chicago mill is now able to give prompt deliveries. The contract for the vessels called for delivery in 1907, but, at the time the contract for plates was made, it was planned to deliver the vessels this year.

Demand for Shapes. The demand for merchant steel shows no diminution. Buyers are already figuring on their demands for the year commencing next July, but mills are not disposed to make contracts so far in advance. The demand for structural material continues very active. It is estimated that 125,000 tons of material will be required for new buildings along lower Broadway, New York. Among recent contracts awarded, there were 14,000 tons to the American Bridge Co., from the Japanese government for bridges, the material to be rolled at the Ambridge plant.

Will Change to Rails. The demand for rails is still strong, in spite of the heavy orders which have been placed. The Ohio works of The Carnegie Steel Co. at Youngstown will be taken off bars and put on rails. The recent meeting of shafting manufacturers discussed prices and some attempt will be made to restrain the cutting, which is so common among this class of manufacturers. No attempt was made, however, to advance quotations. Bar iron is still weak, and as low as $32.00 has been quoted at Chicago for desirable business, although the usual quotation is from $1.00 to $2.00 higher. Scrap is associated with bar iron in making the one really weak feature of the situation . Prices of old material continue to decline, and even lower quotations are expected.

Coke Shows Improvement. The coke market is showing some improvement, although prices continue to be irregular, some consumers buying unusually large quantities, as a precautionary measure in view of the possibility of the strike of the coal miners.

Wire Is Very Active. The demand for wire and wire products has been so active that there has been some discussion as to the advisability of advancing prices, but the leading interest is opposed to such action. Western mills are rushed with orders and are having difficulty in giving satisfactory delivery.

DEATH OF GEO. K. HOSFORD.

George K. Hosford, until recently resident manager at Cleveland for Rogers, Brown & Co., died at his home, 839 Logan avenue, in that city March 7. He suffered a stroke of paralysis a year ago last April when he was forced to retire from business. He spent a winter in California, but owing to his advanced age was unable to recover his strength. Mr. Hosford was born at Bath, N. H., in 1836 and had been engaged in the pig iron business all his life. He was for a time engaged in the producing end of the industry, managing furnaces at Ironton and Hanging Rock, Ohio, Clarksville, Tenn., and at other points. He then opened an office in Cincinnati as a pig iron broker on his own account. In 1895 he gave up his business and went to Cleveland where he established a branch office for Rogers, Brown & Co. He was in charge of this office until his retirement was forced by his illness and made it one of the most successful of the chain of sales agencies conducted by the Cincinnati company. He was a veteran of the Civil War.

LATE NEW YORK NEWS.

(Special Telegram.)

New York, March 7.—Late rail sales include the following tonnages: St. Louis & San Francisco, 2,500 additional making a total of 14,000; Lorain Southern, 4,000; New York Central, 5,000 additional; Buffalo & Susquehanna, 2,500; Olean Street Railway, 1,500; Las Vegas Tonopah 2,000 additional; various trolley lines, about 15,000 more.

Work on the plans for the new Indiana plant of the Steel Corporation is nearing completion. The reported merger of various independent interests by the corporation is denied in toto.

Pig iron is slightly more active today, with inquiries increased and a larger number of small sales to foundries. The sale of 4,000 tons of basic at full market price is reported unofficially from Pittsburg.

THE WEEK IN IRON CENTERS.

PITTSBURG.

Shapes for the Japs.—Market Apparently Has Underlying Strength.

OFFICE OF *The Iron Trade Review*,
521 PARK BUILDING, March 6.

There is greater strength in the market of this district than appears on the surface. There is an underlying strength which, with the possible exception of bar iron and scrap, which are really weak, has created a feeling of expectancy. What buying has been done has been for the most part on the quiet, but nevertheless it has been in considerable volume during the week under review. The United States Steel Corporation during the week purchased all the available first quarter Bessemer pig iron held by furnaces in the valley, a minimum of 7,000 tons and a maximum of 10,000 tons for March delivery at $17.25, valley furnaces. The Cambria Steel Co. purchased about 3,000 tons of basic on the basis of $17, valley furnaces and several other sales are reported, but not in large tonnages although the aggregate runs up to a considerable amount. It is expected the corporation will come into the market for second quarter Bessemer during the latter part of the present month. The demand for steel is very strong and the scarcity is proportionate. During the week sales of soft Bessemer billets were made at $27.75, Pittsburg and open hearth at $28.75. One sale of a fair tonnage of sheet bars was made at $29. The regular producers of steel are now practically all out of the market and the supply is in the hands of a few middlemen. One producer who ordinarily is quite a factor in this market has turned buyer to supply demands and in this role took quite a large tonnage.

The various reports of consolidations and sales of independent plants to the United States Steel Corporation do not find credence in Pittsburg and they are generally put aside as stock jobbing plans of Wall street.

The demand for structural material continues very heavy and while new business is nothing out of the ordinary the demand for deliveries on specifications against old contracts is very strong. Among the large contracts let during the week was that for the Cook County court house, Chicago, for about 11,000 tons to the Cambria Steel Co. The American Bridge Co., has taken considerable business, the largest single item being a contract for 14,000 tons of structural work for railroad bridges for the Japanese government, this to be turned out at the Ambridge plant of the company and shipped during the coming summer. The demand for steel rails has been heavy during the week, the new Lorain Southern contracting for 4,000 tons and other small scattered contracts bringing the total to nearly 20,000 tons; much of it for electric traction companies. Inquiries amounting to between 40,000 and 50,000 tons have been figured on each week for the past month and about one-third or one-half has resulted in contracts.

The Ohio Works of the Carnegie Steel Co., at Youngstown will be taken off bars and placed on rails about the middle of this month, the demand for rails being so insistent that this movement is necessary, despite the scarcity of semi-finished steel, which has been curtailing outputs in several directions.

Pig Iron.—During the week the United States Steel Corporation purchased from the Bessemer Pig Iron Association all the existing supply of Bessemer pig iron at valley furnaces controlled by the association for first quarter delivery. Under the terms of the purchase the minimum is 7,000 tons and the maximum 10,000 tons, it being estimated that the supply for March delivery is between these two figures. The price was the same as the corporation paid for its other first quarter Bessemer, $17.25 valley furnaces. The Cambria Steel Co., bought about 3,000 tons of basic at $17, valley furnace and several other sales were made during the week, aggregating in the whole, a good round tonnage. Basic iron is the weakest proposition in the pig iron market. While it has been reported that some basic iron could be secured at lower than $17, but one sale, and that under the influence of other conditions, was reported.

Northern gray forge is strong at $16.50 and one sale was made at $16.75, Pittsburg. Foundry No. 2 is quoted $17.25, valley furnace, but it is reported that $17 could be done on a good tonnage. We quote:

Bessemer Valley	$17.50 to 17.75
Bessemer, Pittsburg	18.35 to 18.60
No. 1 Foundry, Pittsburg	18.50 to 19.00
No. 2 Foundry, Pittsburg	18.10 to 18.35
Gray Forge, Pittsburg	16.50 to 16.75
Basic, Valley	17.00 to 17.25
Basic, Pittsburg	17.85 to 18.10

Ferro-Manganese.—One matter of speculation was put aside during the week when an official of the Carnegie Steel Co. announced that the corporation would not sell ferro-manganese. Two weeks ago it was intimated the corporation would probably enter the market as a seller during the latter part of May, but this now turns out to be without foundation. For prompt delivery ferro-manganese is quoted at $130 to $135 per ton and for forward delivery, second half, at $85.

Billets.—The available supply of billets and sheet bars for prompt delivery are in comparatively few hands and almost entirely out of the province of the regular producers. The excessive demands upon the mills of the corporation by its constituent companies and customers with contracts has kept it out of the market for some time past and other producers are in much the same shape. Middlemen having billets and sheet bars have the situation practically to themselves and sales during the past week have been made at $27.75 for Bessemer billets and $28.75 for open-hearth. Sheet bars have sold at $29, but at this figure there is so little margin for manufacture at the present prices of finished material that business has been done in several instances more for the sake of keeping mills in operation than anything else.

Skelp.—Mills are filled with business on old contracts against which specifications are heavy, but the amount of new business has been light, although there are one or two inquiries out. We continue to quote:

Bessemer grooved, 1.65c to 1.70c; sheared, 1.70c to 1.75c; basic, grooved, 1.65c to 1.70c; sheared, 1.70c to 1.75c; iron skelp, grooved, 1.65c to 1.70c; sheared, 1.80c.

Muck Bar.—As far as can be learned business in this market has been very light during the week and we quote all pig iron muck bar at $31, Pittsburg.

Structural Material.—Structural material is as strong as it has been at any time and there is no let-up in either actual new business or specifications against old contracts. Deliveries are far behind and material ordered last July is now being delivered in many instances and buyers who placed that far back have been practically begging for delivery and have received but little satisfaction, on account of the crowded condition of the mills. During the past week, the contract for the material for the construction of the new Cook county court house, at Chicago, amounting to about 11,000 tons was secured by the Cambria Steel Co. Within the week under review the American Bridge Co., closed for considerable work, notably 14,000 tons of bridge material for the Japanese government to be delivered during the coming summer. We continue to quote prices unchanged as follows:

Beams and channels, 15 in., and under, 1.70c; over 15 in., 1.80c; zees, 1.70c; tees, 1.75c; angles from 3 to 6 inches,

inclusive, 1.70c; over six inches, 1.80c; universal and sheared plates, 6¼ inches and wider, 1.60c base.

Plates.—This market has, if anything, stiffened up a little and universal plates are very strong for four or five months delivery. Sheared plates are not quite as active as universal although the demands of the steel car companies are very pressing and in large volume. Eastern mills are in better shape than those of the central west and are promising from four to six weeks' delivery. We quote:

Tank plate ¼ inch thick, 6¼ to 100 inches, 1.60c f. o. b. mill, Pittsburg. Extras are as follows per 100 pounds, boiler and flange steel plates, .10c; A. B. M. A. and ordinary firebox steel plates, .20c; still bottom steel, .30c; marine steel, .40c; locomotive firebox steel, .50c; all sketches excepting straight taper plates, varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, .10c; complete circles, .20c. Plates in width over 100 inches up to 110 inches, .05c; over 110 inches up to 115 inches, .10c; over 115 inches up to 120 inches, .15c; over 120 inches up to 125 inches, .25c; over 125 inches, up to 130 inches, .50c; over 130 inches, 1.00c. Gauges under ¼ inch to and including 3-16 inch plates on thin edges, .10c; under 3-16 inch to and including No. 8, .15c; under No. 8 to and including No. 9, .25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Rails and Track Material.—Rail makers for the past month have been figuring each week on an aggregate of 40,000 to 50,000 tons, but the business placed has been about one-third to one-half of this amount. The inquiries from electric roads have been particularly heavy and considerable business has been placed. The order of 11,500 tons for the 'Frisco system has been supplemented by about 5,000 tons additional. The Lorain Southern railroad, a new line to be constructed from Lorain, O., to the Ohio coal fields, contracted for 4,000 tons and miscellaneous small lots brought the total up to about 15,000 tons for the week. Light rails are in excessive demand and prices remain stationary as follows:

Fifty pounds and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; light rails, 16 pounds, $30; 20 pounds, $28.50 to $29; 25 to 45 pounds, $28; angle bars for standard sections, 1.50c; spikes, $2.05 to $2.10.

Merchant Steel.—At a meeting of shafting makers in this city last week no changes in prices were announced aside from a practical agreement to abolish the price cutting which has been going on in some quarters. Trade conditions were discussed, but, aside from an understanding to play closer together, no radical action was taken by those who were present and the meeting was of very short duration. We continue to quote prices as follows:

Cold rolled and ground shafting, 50 per cent off in carload lots, and 45 off in less than carloads, delivered in base territory; tire steel, 1.70c to 1.80c; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flat, 1.50c to 1.55c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.05c to 2.10c. The price of planished and machine straightened tire is 1.70c base half extras as below. Iron finished tire up to 1½ inch by ½ inch 1.65c base half extra tire list. Iron finished tire 1½ inch by ½ inch and over to be sold on regular bar basis of 1.50c base, half extra steel card.

Sheets.—Conditions and prices remain about the same as they have been and the volume of new business is only fair, although the demand for delivery on old contracts is great, and most of the mills are behind on deliveries. There has been a scarcity of sheet bars and this has to some extent curtailed tonnage outputs. This is expected to be more serious after the middle of the month when the Ohio works of the Steel Corporation will be taken off bars and put on rails. We quote:

Black steel sheets, box annealed, cold rolled, one pass: Nos. 11-12, 2c; Nos. 13-14, 2.05c; Nos. 15-16, 2.10c; Nos. 17-21, 2.15c; Nos. 22-24, 2.20c; Nos. 25-26, 2.25c; No. 27, 2.30c; No. 28, 2.40c. Galvanized, Nos. 10-11, 2.35c; Nos. 12-14, 2.45c; Nos. 15-16, 2.55c; Nos. 17-21, 2.70c; Nos. 22-24, 2.85c; Nos. 25-26, 3.05c; No. 27, 3.25c; No. 28, 3.45c. Corrugated roofings, 1.70c per square for No. 28 painted, 2½-inch corrugation; 3.05c per square for No. 28 galvanized, 2½-inch corrugation. Quotations f. o. b. Pittsburg on large lots.

Tin Plate.—New business is comparatively light, although specifications against old contracts continue heavy and mills are behind on deliveries. In this market the scarcity of steel is felt to a considerable extent and this condition is liable to be worse in the near future.

We quote: $3.50 per base box, f. o. b. Pittsburg, 14 x 20 100-pound cokes, terms 30 days, less two per cent off for cash in 10 days. Some mills allow a 5c per box rebate on this price to the large trade.

Hoops and Bands.—Mills are pretty well filled up and specifications on contracts are coming in satisfactorily and in fair volume. New business since the recent advance has been normal, but not heavy. We quote:

Hoops, 1.90c in carload lots, and 2c on less than carload lots, bands, 1.50c base, half extras as per standard steel card. Prices f. o. b. Pittsburg.

Merchant Pipe.—This market continues to run along in the even tenor of its ways as has been the case for several months. There have been several veiled inquiries for fair tonnages for line construction, but nothing definite will be done until details regarding franchises have been worked out. Mills have a large tonnage booked, but new business has been nothing out of the ordinary and prices remain the same. We quote pipe, consumers' carloads as follows, with jobbers' carloads one point higher discount:

	Steel		Iron	
Consumer's Carloads	Black	Galv.	Black	Galv.
⅛ and ¼ inch	71	55	67½	51½
⅜ inch	73	59	69½	55½
½ inch	75	63	71½	59½
¾ to 6 inches	79	69	76	66
7 to 12 inches	74	59	71	55½
EXTRA STRONG PLAIN ENDS.				
⅛ to ⅜ inch	64	52	60½	48½
½ to 4 inches	71	59	67½	55½
4½ to 8 inches	67	55	63½	51½
Double extra strong plain ends, ½ to 8 inches	60	49	56½	45½

Boiler Tubes.—Customers are specifying freely against contracts and considerable new business is being placed, especially for locomotive boiler tubes. On merchant boiler tubes, 22 feet and under, consumers' carloads, we quote as follows:

	Steel	Iron
1 to 1½ inches	46	41
1¾ to 2¼ inches	58	41
2½ inches	60	46
2¾ to 5 inches	66	53
6 to 13 inches	58	41

Less than carload lots two points less.
2½ inches and smaller, over 18 feet, 10 per cent net extra.
2¾ inches and larger, over 22 feet, 10 per cent net extra.

Merchant Bars.—Common iron bars are considerably weaker in price and during the week under review took a still further decline and are now quoted 1.75c to 1.80c Pittsburg on bars made partly from scrap while the double refined iron bars, made from all muck bar are quoted 2c to 2.05c and some business has been done on this basis. We quote:

Common iron bars, 1.85c to 1.90c in carload lots, 1.95c in less than carloads; Bessemer steel bars, 1.50c; open-hearth steel bars, 1.50c; plow and cultivator, 1.50c net; channels, angles, zees and tees, under 3 inches, 1.60c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds .10c advance, less than 1,000 pounds, of a size, .30c advance.

Wire and Wire Nails.—On account of the high prices of steel, several interests have advocated an advance in price of wire products, but the leading interests have succeeded in preventing the advance. New business is fair on all lines while specifications against old contracts are heavy. This is particular-

ly true of wire nails. Specifications on barb wire contracts are being received in fair volume and on smooth fence wire contracts they are heavy. Mills are runnjng full to maintain shipments on old contracts and the prospects are very bright. We quote:

Wire nails, jobbers' carload lots, $1.85; retailers' carload lots, $1.90, and less than carload lots, $2; painted barb wire, $2 for jobbers in carloads; retailers in carloads, $2.05, and less than carloads, $2.15, with 30c for galvanizing; plain wire $1.70 to jobbers and $1.75 by carload.

Old Material.—Scrap is about the only real weak point in the market aside from bar iron. This is accounted for to a large extent by the high prices forced during the winter by speculating dealers who are now reaping their rewards in the slump which followed the high prices they brought about. The railroads are out with large lists, but have comparatively few bidders, dealers being engrossed in selling their accumulations rather than taking on new obligations. Mills are buying only as they require the scrap and sales have been in comparatively small lots. We quote: Heavy melting stock, gross tons, $15.50 to $15.75; old rails, long lengths, $15.75 to $16; No. 1 cast scrap, $15.50 to $15.75; cast scrap borings, $9.50 to $9.75; bundles sheet scrap, $14 to $14.50; No. 1 railroad wrought scrap, $17.50 to $18; No. 1 yard faggotting scrap, $17.50 to $18; low phosphorus scrap, $19 to $19.50; wrought turnings, $12 to $13; busheling scrap, $14.50 to $14.75; iron axles, $25 to $26.

Coke.—Prices are firm and a little stiffer than they were last week, this being particularly true of the foundry grade which is now quoted $2.90 to $3.10 for spot delivery although this could be shaded considerably on a contract for the remainder of the year. Furnace coke is quoted $2.35 to $2.50 for prompt shipment. There has been a heavy demand for foundry coke within the past week and several good sales have been made. It is thought some foundries are stocking up in anticipation of a soft coal strike because they have bought a great deal more than their usual requirements. A slump in prices is expected before the first of April when the operators and miners come to an agreement, which it is confidently predicted will be the case in the soft coal regions. The estimated production of the Connellsville district for the week ending Feb. 24, was 280,637 from the upper district and 98,974 for the lower district. The Mahoning plant of the Cambria Steel Co., has shut down indefinitely, taking 208 ovens out of the active list.

CHICAGO.

Pig Iron Market Not So Strong.—Heavy Specifying in Finished Material Contracts.

Office of *The Iron Trade Review*,
1164 Monadnock Block, March 6

There was little buying in the local market last week. Pig iron continues apathetic and irregular, and furnaces are growing more anxious for forward business. Specifications for finished material show no diminution, especially for those materials which enter into outdoor operations. Two months is the earliest delivery that can be given on galvanized sheets, and from three to six months is required on structural shapes. Cast iron pipe foundries are comfortably filled for the spring and summer months, while wire mills are laboring under the most insistent demand for material they have felt in years. There is a dearth of new business for the heavier lines of finished steel, but this is a condition not unlooked for in view of the tremendous tonnage on mill books. The relaxation is most noticeable in plates, for which the demand has been of a sporadic nature for some weeks and mills are none too crowded with shipping instructions. The decision of the American Shipbuilding Co. not to build this year the three boats for which it had ordered 14,000 tons of plates has made a wide gap in the prospective tonnage for the South Chicago mill, and this interest is again in position to give early deliveries of sheared plates. Manufacturers of universal sizes are also actively seeking new tonnage and offering deliveries within one week from date of order. Since the meeting of shafting manufacturers in Pittsburg last Wednesday, at which prices were reaffirmed, this product has taken on renewed strength. For some weeks list discounts have been shaded, but it is understood the schedule will be more rigidly maintained than ever before under the new agreement. Bar iron continues soft, and prices have declined $1 a ton. Scrap is also weak and prices are lower.

Pig Iron.—The general sentiment of the market remains about the same. Transactions in pig iron have been of an insignificant nature, and the week was one of unusual dullness. There is still a variation of 50 cents a ton in the quotations of southern irons, some furnaces asking $14.00 Birmingham for No. 2 foundry, and others $14.50. A similar condition also exists with respect to northern irons, the quotations on which range from $19 to $19.50 Chicago for No. 2 foundry. Only a few of the more prominent producers, northern and southern, are maintaining a hard and fast schedule. These have well filled order books and can afford to take a comfortable view of the outlook; with other makers, new tonnage is more urgently needed and if the inquiry is of a satisfactory nature, the bottom price can usually be secured. Deliveries from the south have grown more irregular of late owing to the car shortage in that section, and inquiry for small tonnages has correspondingly increased. There is little disposition shown to buy for second and third quarter shipments, despite the irregularities that exist. Lake Superior charcoal and malleable Bessemer are both very strong at the prices given below, early deliveries of either iron being hard to obtain. High silicon irons, as well as the cheaper grades are weak because of their plentifulness, and regular quotations are shaded on desirable orders. We quote as follows:

Lake Superior charcoal	$20.00 to 20.50
Northern Foundry No. 1	19.50 to 20.00
Northern Foundry No. 2	19.00 to 19.50
Northern Foundry No. 3	18.50 to 19.00
Northern Scotch Foundry	19.50 to 20.00
Ohio Strong Softeners No. 1	20.30
Ohio Strong Softeners No. 2	19.80
Southern Foundry No. 1	18.40 to 18.90
Southern Foundry No. 2	17.90 to 18.40
Southern Foundry No. 3	17.40 to 17.90
Southern Foundry No. 4	17.15 to 17.65
Southern No. 1 Soft	18.40 to 18.90
Southern No. 2 Soft	17.90 to 18.40
Southern Gray Forge	16.40 to 16.90
Southern Mottled	16.15 to 16.65
Southern Silveries (4 percent to 6 percent Silicon)	18.40 to 18.90
Jackson Co. Silveries, 8 to 10 percent Silicon	23.30 to 24.30
Alabama and Georgia Car Wheel	22.65
Malleable Bessemer	19.50
Basic Iron	18.65

Coke.—Demand for coke is of light proportions and the market has a soft appearance. Consumers apparently have outgrown the alarm felt over the probabilities of a coal strike and are not buying as freely as they were a few weeks ago. Fuel on track is easily moved because of the concessions in prices usually offered on such consignments. Current prices for standard 72-hour Connellsville brands range from $2.85 to $3 at the ovens, or $5.50 to $5.65 Chicago; furnace coke at $2.25 to $2.50 ovens. By-product coke for spot shipment or future delivery is quoted at $5.80 Chicago, or $3.15 ovens.

Billets and Rods.—Both rods and billets are extremely scarce and firm in this market. An order for 4,000 tons of forging billets offered last week at attractive prices could not find a taker among Chicago mills. Local manufacturers are declining further tonnage for delivery in the next three months, being tightly sold up to for this period. The leading producer of rods has a small tonnage of the Bessemer variety for sale, but is out of the market on basic. We continue to quote forging billets, $35 Chicago; Bessemer wire rods, $36 Chicago.

Iron and Steel Bars.—Bar iron has

again dropped to a lower level, the market today being quoted at 1.65c Chicago. Prices are very soft and there is little demand, as low as 1.60c having been quoted on an inquiry for 1,100 tons. Specifications are the one strong feature of the situation. These are very active, indicating continued heavy consumption. Little new tonnage is coming forward for steel bars, and slight movement is expected in this respect for several weeks. Specifications, however, for all steel bar sizes are heavy, mills being unable to keep pace with the wants of their customers, and constantly falling behind in deliveries.

We quote carload lots, Chicago, delivery, as follows: Soft steel bars and bands, 1.66½c half extras; soft steel angles, less than 3 x 3, 1.76½c; hoops, 2.06½c base, full extras; old rail stock, 1.70c to 1.80c. There is a good movement from local warehouses and jobbers' prices are firm. We quote bar iron, 2.25c full extras; soft steel rounds and squares, 3 inches and larger, $2 per 100 pounds base; flats, 2 inches to 4 inches by 1⅛ inch and thicker, $2 per 100 pounds base; flats, 4½ inches x 5 inches and 6 inches x 5-16 inch and thicker, $2 per 100 pounds base; all ovals, half ovals and half rounds, $2 per 100 pounds base; steel bands, $1.95 to $2.00 half extras; soft steel hoops, $2.30 to $2.40 full extras. Other sizes not mentioned above, $1.85 per 100 pounds base, plus half extras.

Sheets.—The consumption of sheets in the western territory is very heavy. Mills are experiencing considerable difficulty in keeping pace with their specifications, especially on galvanized, and prompt deliveries are hard to obtain. A fair volume of new business is also current, some consumers asking bids on their year's requirements. Prices are extremely firm. Mill shipments, Chicago delivery, are quoted as follows:

Nos. 8, 9 and 10, 1.86½c; Nos. 11 and 12, 1.91½c; Nos. 13 and 14, 1.96½c; Nos. 15 and 16, 2.06½c. Box annealed, Nos. 18-20, 2.26½c to 2.31½c; Nos. 22-24, 2.36½c; No. 26, 2.41½c; No. 27, 2.46½c; No. 28, 2.56½c; No. 29, 2.71½c; No. 30, 2.81½c. Jobbers' prices are as follows: No. 10, 2.15c to 2.25c; No. 12, 2.20c to 2.30c; No. 14, 2.25c to 2.35c; No. 16, 2.35c to 2.45c; Nos. 18 and 20, 2.50c to 2.55c; Nos. 22 and 24, 2.55c to 2.60c; No. 26, 2.60c to 2.65c; No. 27, 2.65c to 2.70c; No. 28, 2.70c to 2.75c; No. 30, 3.15c to 3.20c.

Quotations on galvanized shipments, carload lots, mill shipments, are as follows: Nos. 10-11, 2.51½c; Nos. 17-21, 2.86½c; Nos. 22-24, 3.01½c; Nos. 25-26, 3.21½c; No. 27, 3.41½c; No. 28, 3.61½c; No. 29, 3.86½c; No. 30, 4.11½c. From store, galvanized sheets are quoted as follows: Nos. 10 and 20, 3c to 3.10c; Nos. 22 and 24, 3.15c to 3.25c; No. 26, 3.35c to 3.45c; No. 27, 3.55c to 3.65c; No. 28, 3.75c to 3.85c; No. 30, 4.95c to 5c.

Merchant Steel.—No let-up is noted in the demand for merchant steel shapes. Requests for material are of the most urgent character and few specifications are filled in their entirety, mills, pro rating their output in order to give to each customer a portion of his requirements. Stocks in consumers' hands amount to nothing. Buyers are sounding producers on their wants for the year commencing next July, but are receiving little encouragement from mills to place these contracts. Prices are very firm; on cold rolled shafting an advance is early expected. Mill shipments, Chicago delivery, are quoted as follows:

Spring steel, 2.10c; sleigh shoe, flat sizes, 1.71½c; concave and convex, 1.86½c; cutter shoe, 2.35c to 2.40c; smooth finished machinery steel, 1.91½c; smooth finished tire, 1.86½c base; plow steel, 2.20c and upward, according to quality; toe calk steel, 2.21c; railway spring, 1.86½c. Cold rolled shafting, 50 per cent off in carload lots and 45 per cent in less than carload lots. Crucible tool steel, 6½c to 8c; special grades of tool steel, 13c and up.

Plates.—Specifications and new tonnage are very light, especially on universal plates. Deliveries of the latter can be given in less than one week from date of placing order. The decision of the American Shipbuilding Co. not to build this year the three boats for which it recently received contracts, has made a big gap in the tonnage on the South Chicago mill's books, and this interest is now in position to give prompt deliveries on new specifications. Prices are firm, despite the softness of the market. We quote mill shipments, Chicago delivery, as follows:

Tank steel, ¼ inch and heavier, up to 100 inches wide, 1.76½c base; flange steel, 1.86½c base; marine steel, 1.96½c base; all full extras. Plates 3-16 inch thick, $2 extra; gauges, 7 to 8, $3 extra; No. 9, $5 extra. Less than carload lots, $5 extra. Store prices are very firm. We quote from local stocks: tank steel, ¼ inch and heavier, up to 72 inches wide, 2c to 2.10c; 72 inches to 96 inches wide, 2.10c to 2.20c; 3-16 inch up to and including 60 inches wide, 2.10c to 2.20c; 3-16 inch 72 inches wide, 2.35c to 2.45c; No. 8, up to 60 inches wide, 2.15c to 2.25c; flange steel, 25c extra; heads, 25c extra.

Structural Steel.—There is a noticeable depreciation in the demand for structural shapes. Specifications are coming in slowly, and new tonnage is almost wholly for far deliveries. The principal contract of the week is the letting of the Cook County building. Eleven thousand tons of material are involved in this structure, the contract for the steel going to the Cambria Steel Co. Prices are without change, and we quote mill shipments, Chicago delivery, as follows:

Beams and channels, 3 to 15 inches, inclusive, 1.86½c; angles, 3 to 6 inches, 1.86½c; angles, larger than 6 inches, on one or both legs, 1.96½c; beams, larger than 15 inches, 1.96½c; zees, 3 inches and over, 1.86½c; tees, 3 inches and over, 1.91½c, with the usual extras for cutting to exact lengths, punching, coping, bending, or other shop work. Quotations on lots from store are as follows: All angles, 3 inches and larger, $2.25 per 100 pounds base; tees, 3 inches and larger, $2.30 per 100 pounds base; 3, 4, 7, 8, 9, 12 and 15-inch beams, $2.25 per 100 pounds base; 5, 6 and 10-inch beams, $2.50 per 100 pounds base; 18, 20, and 24-inch beams, $2.35 per 100 pounds base; 3, 4, 7, 8, 9, 10, 12 and 15-inch channels, $2.25 per 100 pounds base; 6 and 10-inch, 15-pound channels, $2.50 per 100 pounds base; 12-inch, 20½ pound channels, $2.35 per 100 pounds base; 5-inch channels, $2.75 per 100 pounds base.

Merchant Pipe.—Demand for pipe is of good volume and mills are in a very satisfactory condition regarding the tonnage on their books. Prices are strong, with the prospects that an advance will be made at an early date. We continue to quote carload lots, f. o. b. Chicago, as follows: ¾ to 6-inch black steel pipe, 78.35 per cent discount from list, and galvanized, 68.35 per cent. Minimum quotations from store are 76½ to 77 per cent discount on the base sizes, ¾ to 6-inch black steel pipe.

Boiler Tubes.—No change is noted in tubes. Both iron and seamless are in good demand, mills being well sold up on each. Prices are firm, official discounts being as follows:

	Steel	Iron	Seamless
1 to 1¼ inches	40.35	37.35	53.00
1¼ to 2¼ inches	54.35	39.35	40.00
2½ inches	56.35	44.35	43.00
2¾ to 3 inches	62.35	51.35	
Up to 4¼ inches			50.50
6 to 13 inches	52.35	37.35	

Less than carload lots, from store, as follows:

	Steel	Iron	Seamless Steel
1 to 1¼ inches inclusive	40	35	42½
1¼ to 2¼ inches, inclusive	50	35	35
2½ inches, inclusive	52½	35	30
2¾ to 3 inches, inclusive	60	47½	42½

Cast Iron Pipe.—New inquiry this week is light, the only contract of importance pending being that of the city of Cleveland which is figuring on 3,500 tons. All the pipe foundries are com-

fortably filled with work for several months ahead, the mild winter having brought out an unusually strong inquiry earlier than usual. No change is noted in prices, and we continue to quote 4-inch water pipe, $31; 6, 8, 10 and 12-inch, $30; larger sizes, $29.50; gas pipe, $1 extra.

Wire Products.—The market for wire products is of an extremely active nature. Requests for early shipments are of the most urgent character and are piling up on mill desks at an alarming rate. The output of western mills is wholly inadequate to meet the demand, and few dealers, if any, are able to get prompt shipment of their complete specifications. The story is the same from all sections of the country—low and depleted stocks and an abnormal demand. It will be several months before producers will have caught up with their orders. Prices are very firm, carload lots to jobbers, Chicago delivery, being quoted as follows:

Wire nails, $2; painted barbed wire, $2.15; galvanized barbed wire, $2.45; smooth annealed wire, $1.85; smooth galvanized wire, $2.15; polished staples, $2.15; galvanized staples, $2.40. Carload lots to retailers, 5 cents higher than above prices; less than carload lots, 15 cents higher.

Old Material.—From a consumptive demand standpoint, the market might almost be said to be in a state of coma. Trading was never so quiet nor prices so soft as at the present time, and the bottom does not seem to have been reached. The mild weather has facilitated the accumulation of material by railroads, and these producers are unloading large tonnages on the market. This week, the C. M. & St. P. has out a list of 1,000 tons; the Santa Fe one of 3,500 tons, and the Wisconsin Central one of 250 tons. We have lowered several of our prices, and quote, gross tons in the first paragraph, as follows:

Old Steel Rails (4 feet and over)	$14.50 to 15.00
Old Steel Rails (less than 4 feet)	13.50 to 14.00
Old Car Wheels	19.00 to 19.50
Old Iron Rails	21.00 to 21.50
Relaying Rails, subject to inspection	27.00 to 27.50
Heavy Melting Steel	13.00 to 13.50
Mixed Country Steel	11.50 to 12.00

We quote as follows, net tons:

No. 1 R. R. Wrought	$15.00 to 15.50
No. 2 R. R. Wrought	14.00 to 14.50
Shafting	17.00 to 17.50
Dealers' Forge No. 1	12.00 to 12.50
Wrought Pipe and Flues	11.50 to 12.00
No. 1 Cast, 150 pounds and less	13.00 to 13.50
No. 1 Mill	8.50 to 9.00
No. 1 Busheling	10.50 to 11.00
No. 2 Busheling	10.00 to 10.50
Country Sheet	8.00 to 8.50
No. 1 Boilers Cut	11.50 to 12.00
Boiler Punchings	14.00 to 14.50
Iron ar Axles	22.50 to 23.00
Steel Car Axles	19.00 to 20.00
Iron Axle Turnings	11.50 to 12.00
Cast Borings	9.00 to 9.50
Mixed Borings, etc	9.00 to 9.50
Machine Shop Turnings	11.00 to 11.50
Railroad Malleable	14.00 to 14.50
Agricultural Malleable	12.50 to 13.00
Stove Plate and Light Cast Scrap	10.50 to 11.00
Old Iron Splice Bars	17.50 to 18.00

CLEVELAND.

Sales of Pig Iron Small, but Market Has a Better Tone.

OFFICE OF *The Iron Trade Review*,
BROWNING BUILDING, March 6.

Iron Ore.—Preparations are going forth rapidly for the opening of navigation, which from present appearances will be at an unusually early date. Coal is being loaded in large quantities, and the upward movement will be heavy. Except on the Bessemer line, ore on the docks is plentiful and furnaces will experience no hardship before the new movement begins, as their needs have been generally covered until May 1. Negotiations are under way for the settlement of certain minor labor differences, and no trouble is anticipated in this direction. Practically no sales are being made, and prices continue on the basis of $4.25 for Old Range Bessemer.

Pig Iron.—Although current business is of small proportions, the pig iron market manifests a slightly stronger tendency than a week ago. Recent sales of basic cleared the situation materially in that line, and a canvass of producers which has just been completed shows the amount available for first half to be exceedingly small; in fact, certain furnaces expect trouble in filling contracts now on hand. Prices have stiffened and are firm on the basis of $17.00 valley. Bessemer has also become stronger through the action of the steel corporation in taking all iron procurable for March. It is understood that considerably less than 10,000 tons was secured at the same price as the last purchase. This deal, together with the expectation that the steel corporation will buy further for first half delivery, has established Bessemer firmly at $17.50 valley. Any brisk buying movement will probably send it higher. Foundry inquiries continue in good number, and the usual run of small sales is reported, though there is an entire absence of deals for round tonnages. The local product is selling at $17.75 delivered. Coke is feeling the effect of the threatened coal strike with increasing force, and has become much firmer with quotations at $2.35 to $2.50 furnace for spot delivery or on short contracts, and at $3.00 to $3.25 for foundry grades.

Bessemer	$18.10 to 18.35
No. 1 Foundry	18.00 to 18.50
No. 2 Foundry	17.50 to 17.75
No. 3 Foundry	17.00 to 17.50
No. 2 Southern	17.85 to 18.35
Gray Forge	16.85 to 16.85
Gray Forge, Southern	15.85 to 16.35
Lake Superior charcoal	19.50 to 20.00

Finished Material.—A lessened demand is noted in certain lines, notably plates and structural materials. In case of the former better deliveries are procurable, and while premiums have been secured in some cases during the week, in others quotations involving advanced prices for immediate shipment have failed to land the business. Structural materials can be secured on short order, though mills which are in shape to handle new business are finding no difficulty in keeping their books well filled. The jobbers are securing a large share of the spring business. Billets are exceedingly scarce. The leading interest in bar iron is selling at 1.75c Youngstown, and there is a fair movement of this material. Steel bars are obtainable for prompt delivery in some quarters, while other mills are not looking for business. Sheets continue in brisk demand.

Old Material.—The situation continues practically as reported last week, with current business confined to trading among dealers and with mills still holding off. Prices manifest a sagging tendency and in some cases are decidedly lower. The opinion prevails, however, that the low figure has not as yet been reached, although radically lower quotations are not expected. We quote f. o. b. Cleveland as follows:

Old Iron rails	$20.50 to 21.50
Old steel rails (over 6 feet)	16.00 to 16.50
Old steel rails (under 6 feet)	16.50 to 17.50
Old car wheels	16.00 to 16.50
Steel boiler plate	12.00 to 13.00
Steel axles	20.00 to 21.00
Malleable iron (railroad)	15.00 to 16.00
Malleable iron (agricultural)	13.00 to 14.00
Heavy steel	14.00 to 14.50
Country mixed steel	13.00 to 13.50
No. 1 R. R. wrought	14.50 to 15.00
No. 1 busheling	12.75 to 13.50
No. 1 machine cast	12.50 to 13.00
Iron axles	22.00 to 23.00
Axle turnings	11.00 to 12.00
Wrought turnings (free from cast)	9.75 to 10.75
Grate bars	9.50 to 10.00
Pipes and flues	12.00 to 13.00
Tank iron	10.50 to 11.00
Hoop and band iron	7.50 to 8.00
Sheet iron	6.50 to 7.00
Wrought drillings	9.75 to 10.75
Stove plate	10.50 to 11.00
Cast borings	7.50 to 8.00

NEW YORK.

Pig Iron Market Featureless.—Structural Material Still in Great Demand.

OFFICE OF *The Iron Trade Review*,
ROOM 1315, No. 150 NASSAU ST., March 5.

Pig Iron.—The market this week is absolutely without new features. Pressure for delivery on old contracts continues, but the lull in buying shows no signs of coming to an end. Foundries are running at top speed with plenty of orders ahead, but many of the melters have bought well into the spring and are in no hurry to buy more until they can make a guess as to which way the cat is going to jump. Foundry yards, especially in New England, carry considerable stocks of pig iron and coke, but not a few melters are consuming more than they anticipated earlier in the season and it is to these that the small lots which furnish practically the only current business are to be delivered. On the other hand, the principal producers are also sold out on standard

grades for some weeks to come and are not anxious to secure new orders at a sacrifice. The reports of price cutting may usually be traced to furnaces which have odd lots of off grades or to producers who have little known brands for sale. Inquiries are in small volume only, the most important one discoverable today being for 2,500 tons of foundry iron which was withdrawn a week or so ago and is now advanced only tentatively. There has been some buying of basic iron, but this has also been in much smaller volume than that of similar periods in December and January. Transactions in foundry grades included sales of 500 tons of No. 2 Pennsylvania, 200 tons each of No. 2 Virginia and Alabama, and 750 tons of No. 2 plain, northern, and gray forge. The small volume of inquiries shows that consumers in this section of the country are not apprehensive as to the outcome of the present negotiations between the coal miners and their employers. Ferro-manganese has been, if anything, a little firmer during the past few days. Prices now range from $110 to $120 for delivery in March, April and May and for shipment during the last half $85 to $90 is asked.

Northern No. 1 Foundry	$18.25 to 19.00
No. 2 Foundry	17.75 to 18.50
No. 2 Plain	17.50 to 18.00
No. 1 Southern Foundry	18.00 to 18.75
No. 2 Southern Foundry	17.50 to 18.50
No. 3 Southern Foundry	16.50 to 17.00
No. 4 Foundry	16.75 to 17.25

Pig Iron Certificates.—The market has been dull and easy during the week, a condition which is accounted for in part by the adoption by the Produce Exchange of a new foundry contract which is to go into effect within two weeks. The only sales reported were one of 100 tons of regular, March at $16.10 and another of 100 tons May foundry at $16.35. Foundry iron warrants follow:

	Bid.	Asked.
Cash	15.90	16.75
March	15.90	16.50
April	15.90	16.75
May	15.90	16.75

Finished Iron and Steel.—Structural steel still enjoys the greatest activity noticeable in the entire field. Although the contracts actually closed include none of the many large tonnages pending, the supply of small lots often at premium figures continues to tax the resources of the producers. The pressure for structural material also makes itself felt in the plate trade in which early deliveries are offered in all lines except those which supply the structural workers. The contracts for rails have not been heavy, comparatively small lots for trolley lines and additions to orders of railroads already reported making up the bulk of the new business. Some large tonnages are, however, still pending. The amount of business in the building projects in New York in which the makers of structural steel are interested continues to increase in volume. A recent estimate places the amount of steel which will be required in new construction on the lower half mile of Broadway at 125,000 tons. Among the buildings proposed are a 40-story structure to be erected by the City Investment Co., an addition to the Whitehall building, a large structure to be erected by an express company, an addition to the World building and many others which have already been mentioned. The contract for the Manhattan bridge has not yet been re-let. The engineers are at work revising all the specifications and it is expected that the changes to be made will be considerable. New business in other lines of finished products has not been plentiful, but deliveries on old contracts are of record volume. Bar iron has been dull and weak. Following are the prices at tidewater: Angles, 3 to 6 inches x ¼ inch and heavier, 1.84½c; beams, 3 to 15 inches, 1.84¼c; tees, 3 x ¼ inch and heavier, 1.89½c; plates, carloads, tank, 1.74½c; flange, 1.84½c; marine boiler, 2.41½c; refined iron bars, 1.74½c to 1.84½c; soft steel bars, 1.64½c to 1.84½c; sheets, No. 28 black, 2.40c.

Old Material.—There is no apparent change in the market. Prices are weak with a downward tendency. Conditions have been even more quiet than those of last week. Consumers are well satisfied with the course of the market and on the part of holders there has been no disposition to crowd matters. A sale of 200 tons of heavy melting steel scrap is reported and one a few days later of 500 tons at a slightly higher price. There is a fair demand for rails for rerolling and about 300 tons of old car wheels are among the sales reported. The following are prices approximately f. o. b. tidewater:

Old iron rails	$21.00 to 22.00
Old steel rails, long lengths	14.50 to 15.00
Old steel rails, short pieces	14.00 to 14.50
Relaying rails	22.00 to 23.00
Old car wheels	17.50 to 18.00
Old iron car axles	24.00 to 25.00
Old steel car axles	18.00 to 19.00
Heavy melting steel scrap	14.25 to 14.50
No. 1 railroad wrought scrap	18.00 to 19.00
Iron track scrap	16.50 to 17.00
Wrought pipe	13.50 to 14.00
Cast borings	10.00 to 10.25
Wrought turnings	14.00 to 14.50

CINCINNATI.

Pig Iron Market Quiet and $14 Has Been Shaded on Southern.

March 6, 1906.

Pig Iron.—The market has continued quiet the past week with an easy tone prevailing. There have been sales of moderate quantities and one fair sized order placed on the basis of $13.75 for No. 2 foundry Birmingham. It is claimed in some quarters that this concession was made to protect the consumer against the 25 cent freight rate advance which became effective March 1, nevertheless, it became evident early in the week that a few southern furnaces were willing to accept business on the basis of $13.75 Birmingham and some Birmingham irons which have previously been held at $14.50 are now available at $14.00 Birmingham. There is evidently considerable activity among selling interests to get business, as on the few good sized orders that have been placed there was considerable competition and in one instance $13.75. Birmingham was slightly shaded. It may be said, however, that this order was particularly desirable.

There are two large inquiries for basic iron pending, one for delivery at an Ohio river point for April, May and June and calling for 4,000 tons. Another Ohio concern is asking for prices on 10,000 tons of basic for last half delivery.

While the general market appears to show some weakness and there is keen competition for orders, it is, nevertheless, evident that buyers are showing more interest in the situation and there are more calls for quotations and possibly a slight increase in the tonnage selling, although the tonnage is made up mostly of conservative quantities for nearby deliveries. The general quotation for southern iron is $14.00 Birmingham basis and prices below this are exceptional.

In northern irons the market is slightly easier with $17.25 for No. 2 foundry at furnace the ruling quotation, but in equalizing freight rate difference as low as $17.00 furnace has been done.

We quote f. o. b. Cincinnati, based on the advance in freight rates from the south of 25 cents per ton as follows:

Southern Foundry No. 1	$17.25 to 17.50
Southern Foundry No. 2	16.75 to 17.00
Southern Foundry No. 3	16.25 to 16.50
Southern Foundry No. 4	15.25 to 15.50
Southern Foundry No. 1, soft	17.25 to 17.50
Southern Foundry No. 2, soft	16.75 to 17.00
Gray Forge	15.00 to 15.25
Northern Foundry No. 1	18.90 to 19.15
Northern Foundry No. 2	18.40 to 18.65
Northern Foundry No. 3	17.90 to 18.15
Jackson County Silvery, 8 per cent	21.15 to 21.65
Southern Charcoal	22.75 to 23.25

Finished Material.—The market continues steady with a good inquiry and no improvement in deliveries. Jobbers are in some cases obtaining premiums on structural from stock or by transferring mill orders.

Bar iron holds steady. Bar iron is quoted at 1.80c to 1.85c and the recent advance in sheets is well sustained. We quote: steel bars at 1.63c, half extras, with dealers quoting 1.85c

for iron and steel out of store. Galvanized sheets, No. 10 and No. 12, in car lots are 2.58c. We quote black sheets, No. 27 at 2.40c in car lots of 500 bundles. Black sheets out of store are selling as follows: No. 28, 2.85c; No. 27, 2.75c; No. 16, 2.35c; No. 14, 2.25c; No. 12, 2.15c. Tank plates are firm and sell out of store at 2 to 2.10c for ¼-inch and 2.10c for 3-16, Nos. 8 and 10. Beams and channels are quoted at 2.25c to 2.35c from stock and angles at 2.10c to 2.15c for base sizes.

In merchant pipe there is no change in prices and the market is active. We quote f. o. b. Cincinnati:

MERCHANT PIPE.
(Basing Discounts)

	Steel Pipe		Guaranteed Wrought Iron Pipe	
	Black Per cent	Galv. Per cent	Black Per cent	Galv. Per cent
⅛ and ¼ inches	69.7	53.7	....	....
⅜ inch	73.5	61.3	....	....
½ inch	73.7	61.7	....	....
¾ to 6 inches	77.7	67.7	....	....
7 to 12 inches	72.7	57.7	....	....

Coke.—The market is quiet and there is but little trading. Prices are unchanged with furnace coke largely nominal in the absence of business. Foundry coke is slightly easier in tone. Quotations at the leading coke producing districts are as follows:

Wise County, Va. Furnace Coke prompt shipment	$2.50 per ton
Wise County, Va. Foundry Coke prompt shipment	3.00 to 3.25 per ton
Pocahontas Furnace Coke on contracts	2.50 per ton
Pocahontas Foundry Coke on contracts	2.75 to 3.00 per ton
Connellsville Furnace Coke prompt shipment	2.50 per ton
Connellsville Foundry Coke prompt shipment	2.90 to 3.25 per ton
New River Foundry Coke on contracts or prompt shipment	3.00 to 3.25 per ton
New River Furnace Coke, prompt shipment	2.50 per ton

†Wise County, Va., Coke on Furnace contracts is sold mainly on a sliding scale basis for pig iron prices on the following basis: $1.65 per ton on $9.00 pig iron, plus 17 per cent of the advance on pig iron above $9.00 Birmingham

Old Material.—An easy tone prevails and the market is unsettled with some descriptions lower. We quote f. o. b. Cincinnati:

Old No. 1 railroad wrought, net tons	$14.00 to 14.50
Cast machine and foundry, net tons	12.50 to 13.00
Old iron rails, gross tons	21.00 to 22.00
Old steel rails, gross tons	15.50 to 16.00
Old short lengths, gross tons	16.00 to 17.00
Old iron axles, net tons	22.00 to 23.00
Stove plate, net tons	10.00 to 10.50
Wrought turnings, net tons	10.50 to 11.50
Cast borings, net tons	7.50 to 8.00
Car wheels, net tons	17.00 to 17.50

PHILADELPHIA.

Prices of Pig Iron Firm in Spite of Continued Dullness.

March 6.

Pig Iron.—It is significant of the great underlying strength of market conditions that prices have remained firm during the past week, though very little new buying developed. Both sides are apparently content to play a waiting game for a while, waiting to see whether there will be a strike of the coal miners, whether production will outstrip consumption, etc. Some furnace men feel so confident of their position, quite regardless of a possible strike, that they predict a fresh buying movement soon, possibly before the month is out. That will hold prices steady, even if it does not actually advance them. In the meantime they are being constantly pressed by consumers for deliveries of iron and are thoroughly aware that many of these have almost no stock in their yards. These are exactly the same conditions as prevailed a week ago, so that it is unnecessary to dwell upon them. Prices, which are practically unchanged, may be quoted as follows:

No 1X Foundry	$19.00 to 19.50
No. 2X Foundry	18.50 to 18.75
No. 2 Plain	17.75 to 18.00
Standard Gray Forge	16.25 to 16.75
Basic	17.90 to 18.10
Low Phosphorus	25.50 to 26.00
Southern No. 2X, rail	18.75 to 19.00

Finished Material.—Fresh evidences of the enormous demands of the railroads, both for new work and renewals, of the great quantities of structural steel that will be required for new buildings in all the large cities, and of the enormous consumption of finished material in nearly every line, make the outlook for the mills very bright and the feeling as optimistic as ever. Reports from the producing centers show increasing activity. Prices may be quoted without change as follows:

Beams, channels and angles according to specifications, 1.82½c to 2.25c; refined iron bars, 1.75c to 1.85c; steel bars, 1.63½c to 1.83c; plates, 1.83½c to 1.88½c.

Old Material.—Judging by the way prices keep falling, there seems to be no bottom to the scrap market. The mills are reported well stocked up, and if spring brings the usual outpouring of material accumulated by small dealers through the winter even lower figures may be looked for. Few sales are reported, but, as far as can be gathered, ruling prices are about as follows:

Old steel rails	$16.00 to 16.25
No. 1 steel scrap	16.00 to 16.25
Old steel axles	20.00 to 20.50
Old iron axles	25.00 to 25.50
Old iron rails	22.00 to 22.50
Old car wheels	18.00 to 18.50
Choice scrap, R. R. No. 1 wrought	19.00 to 19.50
No. 1 yard scrap	17.00 to 17.50
Machinery scrap	15.75 to 16.25
Low phosphorus scrap	21.00 to 22.00
Wrought iron pipe	14.50 to 15.00
No. 1 forge fire scrap	14.75 to 15.25
No. 2 forge fire scrap, ordinary	12.00 to 12.50
Wrought turnings	13.75 to 14.25
Axle turnings, heavy	14.00 to 15.00
Cast borings	10.25 to 10.50
Stove plates	12.25 to 12.75

BIRMINGHAM.

No Decrease Noted In Southern Movement Under New Freight Rate.

Birmingham, Ala., March 5.—The pig iron market in this section continues quiet, though there is a strong inquiry now being received by the manufacturers. There is a steady production and all indications point to a good demand all through the second quarter of the year. The railroads announce that the movements of iron have not fallen off to any great extent since the advance in freight rates went into effect March 1. A large amount of iron is yet to be delivered on orders booked some time back. Orders now being received in this district are for small lots, and in almost every instance prompt delivery is requested. However, inquiries being received indicate that some of the larger consumers will have to resort to the markets again, as machinery manufacturers and other consumers have orders on hand for their respective products which means that they are going to need more iron.

There has been no bad weather in this section at all this winter, and positively no interruption has been experienced at any of the coal or ore mines or around the coke ovens.

Some of the manufacturers have been selling small lots of iron immediate delivery at $14.50 per ton, No. 2 foundry iron. Considerable iron has been sold at $14.00 per ton, No. 2, foundry basis. Two furnaces will go into blast during the present month. At a meeting recently held by stockholders of the Woodward Iron Co., the capital stock was increased from two million to three million dollars. While no statements are made by officials of the company, it is believed that the additional capital will be spent in extensive improvements, either a steel plant, cast iron pipe plant or a drawn tube works.

It is announced that the plant of the Kilby Frog & Switch Co., at North Birmingham will begin operations about March 15. This plant has a number of orders on hand for its products.

The plant of the American Cast Iron Pipe & Foundry Co. will be completed within the next sixty days. The works are located at North Birmingham. The foundations for the foundry and machine shops to be erected at East Birmingham, by Payne & Joubert, of New Orleans, are being put in, and indications are that the concern will be ready for operation within four months.

Metal Market

NEW YORK.

March 6.

Pig Tin.—Large available stocks and small demand have resulted in a weak market with prices considerably lower. It is estimated that there is a sufficient stock on hand to supply the domestic market for a month. Today's quotations follow: Spot, 35.35 to 35.65; March, 35.25 to 35.60; April, 35.10 to 35.50; London, £161 15s and £161 2s

6d; arrivals for the month to date, 10; afloat, 3,245.

Copper.—Heavy buying for American and foreign interests has produced a market which is decidedly firmer with prices higher. Today's closings follow: Lake, 18⅜ to 18⅝; electrolytic, 18⅛ to 18⅜; casting, 18 to 18¼; London's closing today: £79 15s and £78 5s. Exports for the month to date, 666 tons.

Lead.—Refined lead of all brands has been quiet but steady in both domestic and foreign markets. Today's closings, 5.35 to 5.40; St. Louis, 5.27½; London, £16.

Spelter.—Refined spelter has been in fair demand and prices are firmer. Today's closings, 6.05 to 6.15; St. Louis, 6.00; London, £24 15s.

CHICAGO.

March 6.

Demand for metals has improved and the market is stronger in tone. Under the active trading copper has fractionally advanced, and today is quoted at 18¾c to 19c for Lake in carload lots, and to 18½c to 18¾c for casting in carload lots. Pig tin has declined slightly, and in car lots is offered at 37c to 37½c, and in less than carload lots at 37½c to 38½c. Spelter is without change at 6¾c to 6¾c for carload lots; pig lead, desilverized, 5½c to 5¾c for 50-ton lots; corroding, 6c to 6¼c for 50-ton lots; sheet zinc, $7.75 list, f. o. b. LaSalle, on car lots of 600-pound casks.

Old metals are soft, concessions being required to bring out orders. Approximate prices of local dealers are as follows:

Copper wire, 15¾c; heavy copper, 15½c; copper bottoms, 14½c; copper clips, 15½c; red brass, 14¼c; red brass borings, 12¼c; yellow brass, heavy, 10¾c; yellow brass borings, 9¾c; light brass, 8¼c; lead pipe, 4¾c; tea lead, 4½c; zinc, 4¾c.

NEW ROAD TO LORAIN.

Joseph Ramsey, former president of the Wabash railroad, during the week announced that he had purchased the Industrial railroad of Lorain from the Sheffield Land Co. and had organized the Lorain Southern railroad for the construction of a line from Lorain on Lake Erie to the Hocking valley coal fields and on to the Ohio river, tapping the coal deposits in those regions. A line into Pittsburg is reported among the plans for later development. The purchase of the Industrial road will give the Ramsey interests entrance to the Lorain steel mills, the carrying for which is at present in the hands of only two or three lines. Accompanying the report of the deal is the rumor that a great independent steel plant is to be erected at Lorain on land held by the Knox syndicate, but verification is lacking.

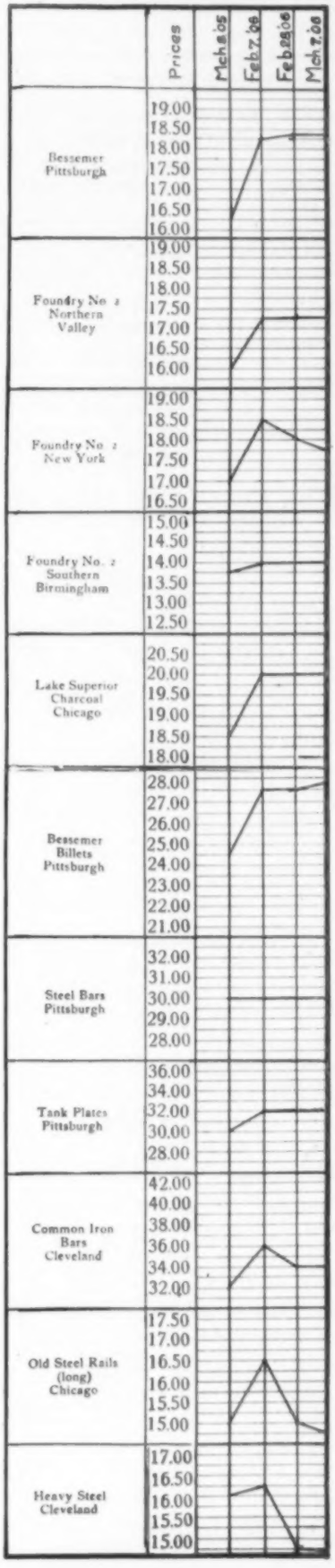
Concerning the enterprise Mr. Ramsey is quoted as follows:

"We have awarded contracts for material, and will push the Lorain Southern to completion as fast as possible. Mr. Holliday, as president of the Ohio Construction Co., will have charge of the work, and we expect to have the line complete to Wellington and a connection with the Wabash and Big Four by July 1. That portion will cost $1,000,000. We have awarded the contract for 4,000 tons of steel rails to the Carnegie company, and have awarded contracts for ties and other material. The line to Ashland will cost about $2,000,000. As to our plans south of Ashland, I am not ready to speak.

"We intend to strike through to the coal fields of southern Ohio, and will extend the line to the Ohio river. As to whether we shall strike east to the Pittsburg district, that remains for the future. Primarily the Lorain southern will be important because of the splendid advantages it offers to many railroads to enter the fast growing mill district of Lorain, and because it will give a new short outlet to Lake Erie for the Hocking Valley and No. 8 coals. Our plans are matured and we intend to build the road without delay. The line ready for immediate construction will be forty-five miles long to Ashland and about fifty-five miles to Mansfield. The company has no coal fields of its own to tap."

New Offices Established.—The Ohio Iron and Metal Co., First National Bank Building, Chicago, having embarked on a policy of expansion in its business operations, has established offices in New York, Pittsburg, Cleveland and St. Louis. Through these offices, which have been placed in charge of competent men, the company will buy and sell iron and steel scrap in the districts contiguous to same on lines which it has followed in Chicago and Cleveland for the past twenty years, each representative following his own initiative in such transactions. The Pittsburg office will also handle pig iron, coal and coke, because of the familiarity of the manager of that office, A. M. Crane, with these products. The branch offices will be located in the following buildings: New York, Trinity Building; Pittsburg, Farmers Bank Building; Cleveland, Citizens Building; St. Louis, Chemical Building. The main offices of the company will remain in Chicago.

PRICE CHART.



THE IRON TRADE REVIEW

Devoted to Iron and Steel Manufacture and to the Machinery, Metal-Working and Foundry Trades.

Published every Thursday by
THE PENTON PUBLISHING CO.
CLEVELAND.

CHICAGO - - - 1164 Monadnock Block
PITTSBURG - - - - 521 Park Building
NEW YORK - - - - 150 Nassau St.

Subscription, $3.00 per annum. To Foreign Countries, $4.50. Advertising Rates Furnished on Application.

The Cleveland News Co. will supply THE IRON TRADE REVIEW through the regular channels of the American News Co.

Entered at the Post Office at Cleveland, O., as second class matter.

PRINTED IN AN OPEN SHOP.

March 8, 1906.

THE EXTENT OF LAKE SUPERIOR ORE RESERVES.

The practical consummation of a deal for the leasing of the Hill ore lands to the United States Steel Corporation focuses attention once more upon the probable total reserves of the Lake Superior region. Excluding some very considerable ore bodies in the Hill holdings which are otherwise taken up, it is believed that the reserves of the properties which can be turned over to the Steel Corporation represent at the minimum estimate 300,000,000 tons. It is curious that the trade has not been in possession, from time to time, of more concise estimates of the total reserves of iron ore in the Lake Superior region. The old statement of the Geological Survey, of three-quarters of a billion tons, was but a rough estimate, intended above all to be conservative, yet it was widely quoted and accepted for quite a while as more or less of a finality. Then, years afterwards, came the estimate of Mr. Schwab of the ores controlled by the steel corporation, at 700,000,000 tons. This estimate saw the light in the worst of all possible ways, a lawsuit, where the premises are totally different from those which would be assumed in a commercial estimate, and perhaps not even clearly defined besides. The Geological Survey estimate gave way to a popular one of something like a billion tons, or perhaps a billion and a half. It is certainly quite safe to say now, that the reserves, known to one interest or another, are over rather than under a billion and a half.

This, however, is but a small part of the question. Over and over again it has been claimed that new discoveries were practically impossible, so thoroughly had the surface been punctured, but the discoveries have not stopped, and where one body, proved up to a certain tonnage, has been a disappointment, a dozen have disclosed a greater extent.

The total of the known reserves of the whole Lake Superior region has never decreased. Despite the large tonnages taken out, each year has seen a greater known total. The new discoveries or developments have exceeded the withdrawals at all times. As long as that remains the case, it seems unwise to speak with any confidence about the time when ultimate exhaustion may be expected.

There is another reason why the time of demise of the Lake Superior region as the chief ore supply of the country should be discussed with reserve, and that is that no rule can be deduced from the past as to the rate of increase in consumption, year by year, which will not point to exhaustion in much less than half the time which would be required, should mining be continued only at the highest rate heretofore experienced, the rate of nearly 35,000,000 tons in 1905. The rate of increase from year to year has been so rapid that startlingly large tonnages should come in a very few years; so large that the present annual tonnage will appear a mere bagatelle.

One thing the past decade has well settled, and that is that the Lake Superior ores, however large or small the total quantity may prove to be, will all be smelted at practically the present points of consumption. There will continue to be a trend towards the shores of the great lakes, but it will not so very seriously affect the total result as was anticipated ten years ago. The fuel will not go much farther towards meeting the ore than it does now.

If this is true of the Lake Superior ores, it is much more likely to be true of ores which are yet to be discovered. Wide circulation is sometimes given to the conclusions of theorists outside the iron industry, who do not bring all the necessary knowledge to bear on the subject. A case in point is the recent utterance of a professor in a western institution of learning, who predicted that through the discovery of lower grade ores in some western states the iron industry would move far west of its present habitat. It appeared to this gentleman that the lower the grade of ore, the more important it was not to haul it to a distance for smelting. As a matter of fact, as the iron content in an ore decreases, the quantity of fuel and flux required to make a ton of pig iron increases much more rapidly than does the quantity of iron ore. The location of the iron industry a generation or two hence may be much more a question of fuel and flux than of ore; even without considering the feature that ore is transported with less damage than coke, and that it is for the future to determine whether the coal should be moved before it is made into coke.

MORE ABOUT OUR SOUTH AMERICAN TRADE.

Comment was made a week ago on the fact that while the United States exported 124,632 gross tons of rails to South America during the calendar year 1905, Great Britain exported to Chili and the Argentine Republic in the same time 120,054 tons, with possibly some unenumerated tonnage to other portions of South America. At that time the figures of exports from the United States in January of this year were not available, but they are now shown to have totaled 11,759 tons, to the whole of South America. British rail exports to Chili and the Argentine Republic in January were 15,647 tons, so that in the one month of January England has run almost as far ahead of the United States as she fell behind in the whole previous year. The American rail mills have been too busy to push export rail trade. The total rail exports in January were only 31,634 tons, the total for the seven months ending with January being 197,731 tons, against 292,735 tons in the seven months ending with the previous January. In the seven months ending

with January, 1904, however, the total was only 31,512 tons, just about the same as the total for the single month of January, 1906.

TIN PLATE DRAWBACK OPERATIONS.

The government has just made public the quantity of tin plate on which it allowed drawback during the fiscal year ended June 30, 1905, 151,677,870 pounds. This is the largest total since the drawback system was inaugurated, in the fiscal year 1884, with the exception of 1889, with 166,087,740 pounds and 1894, with 161,758,361 pounds. The year 1904, with 111,658,352 pounds, was the smallest since 1888. The bonded warehouse system has always been a part of our tariff laws. In 1861 the first drawback law was passed, to extend to domestic manufacturers the benefit of the principle, but it provided that the exported goods should be made wholly from imported material. This was followed by several special laws, and later, in 1890, the McKinley law contained a general provision applying to all materials, and this has formed part of subsequent tariff laws. It provides that the drawback shall be 99 per cent of the duty paid on the material used (not deducting, for instance, the necessary scrap in the manufacture of tin cans) but that the imported material shall so appear in the exported article that the quantity used can be ascertained. Without legislative enactment, the treasury department has extended the scope of the system whereby the material used does not need to be actually visible in the exported article, if it can be shown that it has been used during the process of manufacture. By the special law, and afterwards under the general law, drawback has been paid on tin plate as shown in the following table:

Pounds of Tin Plate on Which Drawback Was Allowed: Year Ended June 30.

1884	97,415,089
1885	127,125,903
1886	136,539,316
1887	123,203,627
1888	108,271,542
1889	166,087,740
1890	150,112,007
1891	149,599,649
1892	119,928,083
1893	128,863,227
1894	161,758,361
1895	126,777,800
1896	137,659,779
1897	139,246,130
1898	147,897,570
1899	122,906,682
1900	125,269,156
1901	127,261,883
1902	125,340,511
1903	123,088,272
1904	111,658,352
1905	151,677,870

It will be recalled that in the fall of 1902 the then American Tin Plate Co. entered into an arrangement with the Amalgamated Association whereby the latter would aid the company in an effort to capture some of the rebate trade. The association would give the company a concession of 25 per cent of the wages involved in making the tin plate to be exported, while the company would give its customer a rebate sufficient to equalize the cost with foreign tin plate with benefit of the government drawback. As no information is available from the company as to the operation of this system, the annual statistics of drawback operations of the government are watched with much interest in order to see if inroads are being made on the Welsh trade. In the fiscal year 1904 it appeared that some business had been done in this direction, the amount of imported tin plate on which the government allowed drawback falling some 130,000 boxes under the average of the four years prior to the inception of this plan. In the fiscal year 1905, however, the government figures have jumped to the highest in the history of the business, with but two exceptions. The above table gives no evidence that the demand for tin plate for this trade has materially increased, even over a period of many years, and the inference is that very little rebate tin plate business has been done lately by the American mills. As to what is done with the three per cent deducted from the Amalgamated Association tin plate wages no one has a right to inquire but the association, and it seems to be satisfied with the results.

It stands to reason that no important part of this drawback trade can be captured by the American mills except at an enormous sacrifice. The wage concession amounts to only 11 cents, on 100-pound plates. The rebate necessary has lately varied from 40 cents to a dollar, according to market conditions and point of delivery. The Standard Oil business, for instance, calls for delivery on the Atlantic seaboard, at the end of the pipe lines, and the freight of the American mills is greater than the ocean freight from Wales. The conditions are practically prohibitive as to the Standard Oil business, and this constitutes more than two-thirds of the total drawback tin plate business done. On the Pacific coast the freights are still more against the American mills. At interior points like Chicago and St. Louis the necessary concession is not nearly so large, but the total demand at such points is not large.

It is interesting to deduct the quantity of tin plate on which drawback was allowed from the total quantity imported, and observe the very small quantity which remains as the ultimate domestic consumption of imported tin plate. It must be remembered that the drawback is paid, not on the actual tin plate which is exported, but on the quantity which would be required, with a minimum of waste, to make the exported containers, etc. Of course, if the waste is beyond that permitted by the government, the difference figures as domestic consumption when it is not. Using for imports the figures of imports for consumption and withdrawals from warehouse, the following table deduces the net imports for domestic consumption since the imports became small:

Fiscal Year ended June 30.	Excess Imports over Drawback. Pounds.	Excess Drawback over Imports. Pounds.
1898	34,013,656	
1899		11,792,801
1900	17,329,441	
1901		6,800,739
1902	74,511,879	
1903		13,878,001
1904	15,300,304	
1905	9,732,287	
Totals	150,887,567	32,471,541
Net total		118,416,026
Annual Average		14,802,003

From 1888 to 1893 inclusive the tin plate imports, less drawback plates, averaged 530,000,000 pounds.

A subscriber has called our attention to a newspaper account of the taking of depositions in a suit against a bridge company at Bucyrus, O. The report states that a manufacturer testified that 500 tons of structural steel which he had just bought cost only $20 a ton delivered and erected in Bucyrus. The article says that the attorney for the

prosecution is satisfied with the testimony. This is a sample of much of the ridiculous stuff which is published in regard to the recent prosecution of bridge companies. When it is considered that the figure mentioned is much below the actual price of the material, to say nothing of the cost of fabricating and erecting, it will be realized that the witness, if reported correctly, could not be telling the truth, and yet such testimony as this is relied upon by sensation seeking attorneys to prejudice the public against manufacturing concerns.

George K. Hosford, whose death this week came after long illness, was one of the most beloved men in the trade. He was a man of the highest character and his personality was such as to command the confidence of all who knew him. In his honesty, his energy and his hearty manner were found secrets of his success.

TIDEWATER STEEL PLANS ANNOUNCED.

Frederick J. Lisman, Sidney H. March and J. M. Ceballos have been appointed a committee to represent the preferred stockholders of the Tidewater Steel Co. A similar committee to represent the common stockholders consists of Charles T. Schoen, C. E. Stafford and Alexander J. Hemphill. The committee will work in unison for the welfare of the company.

The latter committee has sent out the following statement to holders of the common stock. "While the iron and steel industry has been exceedingly active your property has been lying idle for about two years. The undersigned, acting as a committee, and representing a large amount of the common stock, consider it in the interest of all to pool their holdings with a view of disposing of the plant, either by sale or lease, and for that purpose invite your co-operation and request you to promptly deposit your stock with the Guaranty Trust Co., of New York, under an agreement, dated March 1, 1906, of which we herewith enclose copy. There is a debt of about $200,000 on the property coming due within the next eight months, which if enforced by the creditors will result in the equity of the stockholders being eliminated." The committee for the preferred stockholders has sent a letter to the same effect to the preferred shareholders, except that deposits of stock must be made with the Knickerbocker Trust Co.

OLD MINES

Will Again Be Worked in the Humboldt District.

(Special Correspondence.)

Ishpeming, Mich., March 5.—Indications are favorable for a resumption of mining operations, on a fairly large scale, on the Humboldt district, for nearly a quarter of a century past almost entirely neglected. With the exception of a few years' work at the Foxdale and Bessie mines, nothing of importance has been done at any of the other properties, which include the Washington, Hungeford and Baron, formerly the Humboldt. A few weeks ago Oglebay, Norton & Co., operators of mines on the Menominee range, secured an option on the Hungeford, and it is expected that work will be resumed there in the spring. The Breitung estate, in control of the Washington Iron Co., has announced that some of the pits of the Washington mine will be unwatered and that the property will be systematically explored. The Washington company's possession includes some promising prospects from which considerable high grade ore was mined back in the sixties. Its tract embraces several hundred acres, extending westward to the Foxdale mine and east to Clarksburg, over two miles distant.

It was at the Washington mine that the late Edward Breitung made his first stake. After suspending operations there in the early seventies, he secured properties at Negaunee from which his wealth rapidly increased. His estate is now operating two very promising mines, the Mary Charlotte and Breitung Hematite, on the Negaunee range, and besides has possession of a large acreage of mineral land in that vicinity.

It is freely predicted by some of the older mining men of this range, who worked at the Humboldt properties years ago, that the Breitung estate will encounter some large and rich bodies of ore at the Washington. The property was never properly or extensively explored, nor was any of the low grade ore removed during the few years the mine was worked. In those days nothing but ore that assayed from 65 to 68 per cent iron was wanted. During the years from 1867 to 1873 the Humboldt mines supplied the Clarksburg furnaces with all its ores. An old miner still here, who had charge of work at the Washington under George A. St. Clair, captain for Mr. Breitung, now a prominent operator on the Mesabi range, states that there is an unlimited quantity of ore in the Washington, Baron and Hungeford mines, and he predicts that when the properties are properly developed they will rival in importance the Champion and Republic mines, which are farther west on the same range. It is claimed that there is a stope of high grade ore 200 feet in height in the Baron mine, and that a diamond drill hole bored a few years ago by the Maas estate penetrated 65 feet of ore that assayed 65 per cent in iron and .016 in phosphorus. The hole was put down close to the line separating the Baron and Hungeford properties, a short distance from the Foxdale. The latter contains good ore bodies, but the parties who operated it a few years ago were compelled to suspend on account of insufficient capital to properly conduct the work.

The operations of the Breitung estate will be watched with no little interest by mining men of this section, as it is very generally thought that ore of both high and low grades will be found in large quantities in several of the Washington pits and tunnels, the longest of the latter, from which 50,000 tons of Bessemer ore was removed in one year, being over 1,000 feet in length. With successful work being done at the Washington it is expected that the Baron will soon receive attention. It was at this property that Maas, Lonstorf and Mitchell, who in later years were prominent in the opening of mines in and near Negaunee, made their first money. They operated the Baron for several years, suspending at a time when there was little demand for ore. Since then the property has been neglected, both buildings and machinery

There are other properties in the Humboldt district that will soon be heard from. The Pascoe, owned by W. J. Pascoe of Humboldt, on which several pits were a few years ago bottomed in ore, has been examined and pronounced good by some of the leading mining men of this section, though the owner has not yet negotiated a deal that will insure its operation at an early date. M. A. Hanna & Co., who have leased the American and Boston mines, near the Pascoe, will have their pumping apparatus in operation within a few weeks. It is expected that the Dexter and Dye properties, two miles west of the American, will be operated before the close of the coming season.

The Interstate Mining Co., of which Captain Thomas Walters of the Lake Angeline, is mine manager, will reopen the Volunteer mine, Cascade range. This property is principally owned by Gen. R. A. Alger of Detroit. During the past quarter of a century it has been operated by several concerns, including the Oliver, Cleveland-Cliffs, Donora and Jones & Laughlin companies. The ore thus far mined has been considerably mixed, of non-Bessemer grade,

UNION BUILDING

Proposed for Pittsburg Technical and Industrial Societies.

The next meeting of the Pittsburg Foundrymen's Association will be devoted to the entertainment of the Philadelphia Foundrymen's Association and the New England Foundrymen's Association and members of any similar organization in the country who will be present and accept the hospitalities of the Pittsburgers. At the regular monthly meeting of the Pittsburg Foundrymen's association held at the Hotel Henry, Pittsburg, Monday evening, March 5, the plans of the entertainment were discussed after a paper was read by H. E. Field, of Mackintosh, Hemphill & Co. This paper was freely discussed and a vote of thanks tendered Mr. Field, who, is recognized as an authority on his subject, "Molding Sand," as well as on general foundry practice.

On motion by Mr. A. W. Slocum representing the Pittsburg Railway Club, a committee consisting of Mr. Slocum, J. S. Seaman and William Yagle, was appointed to confer with the Pittsburg Railway Club with the end in view of devising plans for the erection of a building in Pittsburg to be used as a club and place of meeting by members of the many technical and industrial associations. It was suggested by Mr. Slocum that the aid of Andrew Carnegie might be solicited toward erecting the building. The committee was appointed with the understanding that this action in no way bound the Foundrymen's Association to co-operate if the plan was not thought feasible.

Those in Attendance.

G. W. Gale, Pennsylvania Malleable Co.
Henry P. Spilker, Sterritt-Thomas Foundry Co.
B. V. Metzger, Buckeye Sand Co.
Ira E. Bixler, Buckeye Sand Co.
G. L. Padgett, Mesta Machine Co.
C. H. Gale, Pennsylvania Malleable Co.
B. H. Prack, Westinghouse Electric & Mfg. Co.
B. D. Fuller, Westinghouse Electric & Mfg. Co.
A. W. Slocum, National Car Wheel Co.
F. H. Zimmers, Union Foundry & Machine Co.
Robert Schweppe, Mackintosh-Hemphill & Co.
H. E. Field, Mackintosh-Hemphill & Co.
Wm. J. McClelland, Mackintosh-Hemphill & Co.
W. M. Hanna, Mackintosh-Hemphill & Co.
Wm. J. Brant, The Millers Products Co.
John B. Coates, Pittsburg Malleable Iron Co.
C. Rauchenberg, Wheeling Mold & Foundry Co., Wheeling W. Va.
T. C. Ward, Hickman, Williams & Co.
W. V. Hoge Jr., Wheeling Mould & Foundry Co., Wheeling, W. Va.
Eliot A. Kebler, Matthew, Addy & Co.
A. C. Daft, Hickman, Williams & Co.
O. W. Mason, Midland Steel Co.
I. D. Kermis, Mesta Machine Co.
L. K. Brown, Zanesville, O.
Jas. McKenzie, Thos. Carlin Sons Co.
L. L. Carson, *American Manufacturer*.
H. W. Walker, W. P. Snyder & Co.
D. R. Donald, Phillips & McLaren.
W. J. Phillips, Phillips & McLaren.
Chas. M. Goldman, S. Obermayer Co.
Wm. H. Colcord, Clinton Iron & Steel Co.
S. D. Sleeth, Westinghouse Air Brake Co.
D. J. Thomas, Sterritt-Thomas Foundry Co.
Edward Miller, Fort Pitt Bridge Works, Canonsburg, Pa.
G. C. Slade, Fort Pitt Bridge Works, Canonsburg, Pa.
Frank Tickner, Lackawanna Steel Co., Buffalo.
J. P. McArdle, Lackawanna Steel Co., Buffalo.
S. J. McCormick, S. J. McCormick Co.
James F. Brown, Mesta Machine Co.
John Maley, Kelly & Jones Co.
L. V. Blue, Wheeling Mold & Foundry Co.
F. C. T. Daniels, Mackintosh-Hemphill & Co.
Adolf E. Mueller, Standard Sanitary Mfg. Co.
Thos. Ahriens, Standard Sanitary Mfg. Co.
H. L. Dorsey, Enterprise Foundry Co.
F. W. Hackenburg, Pittsburg Lamp Brass & Glass Co.
N. J. Clarke, The Bourne-Fuller Co.
Wm. Yagle, Yagle Foundry & Machine Co.
William Kohll, Union Foundry & Machine Co.
John L. Ouell, Union Foundry & Machine Co.
A. R. Golden, Pressed Steel Car Co.
E. F. Bell, Pressed Steel Car Co.
J. D. Frasher, Pressed Steel Car Co.
W. K. Steele, Pennsylvania R. R.
W. E. Crane, Chief Inspector East River Tunnel.
Mr. Walters, United Engineering & Fdy. Co.
F. S. Koch, Steel Casting Co., McKeesport, Pa.

COMPLETE SUCCESS

Of Electric Smelting Reported by Dr. Eugene Haanel.

Toronto, Canada, March 3.—Dr. Eugene Haanel, Canadian superintendent of mines, who is at present at Sault Ste. Marie, Ont., supervising the experiments in electric smelting, reported on Feb. 24 to the Ottawa department of the interior that the demonstration had been a complete success. The output was greater than the figures given by F. W. Harbord, the English expert engaged on the work of the Canadian commission, which visited Europe to make similar experiments. The result has shown the successful smelting of magnetite ore and the desulphurization of pig iron. Charcoal had been successfully substituted for coke, and the inference is drawn that peat will be equally satisfactory. The consumption of the electrode employed was insignificant. Nickel pig of fine quality has been produced from roasted pyrrhotite. The doctor's conclusion is that the process admits of immediate commercial application. The significance of these experiments lies in the fact that while electric smelting has successfully been applied in Europe to hematite ores, it was problematical as to whether it would work in connection with magnetite. Some practical iron and steel manufacturers, however, are not yet convinced that the process can successfully compete with the ordinary methods.

Mining inspector E. J. Corkill, of the Ontario bureau of mines, who returned to Toronto this week from a western trip, states that at the Atikokan iron mine, 135 miles west of Port Arthur, a large plant is being installed and preparations made to start operations in two months. The output will furnish a portion of the supply of ore for the Port Arthur blast furnaces.

Negotiations are in progress between the Coventry Ordnance Co. of Coventry, Eng., and the Canadian government which may result in the establishment of a factory in Canada to make field guns and machinery. The company requires an undertaking on the part of the government to give it the orders for all the artillery required.

Hon. H. R. Emmerson, Canadian minister of railways, has announced that the work shops of the Intercolonial railway at Moncton, N. B., which were destroyed by fire on Feb. 24, entailing a loss of about a million dollars, will be rebuilt.

The Canadian Ship Building Co. of Toronto has taken a contract to construct a passenger and freight steamer for the Canadian Pacific railway's upper lake service. The vessel will be 350 feet long by 44 feet beam and will have quadruple expansion engines of great power. The contract calls for her delivery in the spring of 1907.

The name of the Smith's Falls Foundry and Malleable Co., recently organized, is to be changed to the Rideau Foundry & Malleable Co., owing to its similarity to the name of another concern, the Smith's Falls Malleable Casting Co.

George Seymour Brush died at Montreal on Feb. 23 in his eightieth year. His father was one of the pioneers of Canadian machinery manufacturing, his operations dating back to 1838. The late Mr. Brush studied for the law but afterwards became connected with his father's business, the Eagle Foundry and Engine Works, which after his father's death he conducted for many years.

The Cleveland Pneumatic Tool Co., Cleveland, O., makes an emphatic denial of rumors which have gained currency to the effect that its business is to be sold. No negotiations of this kind are under way or contemplated. The company has recently purchased an additional supply of new machinery of the most advanced type which will greatly increase its output of pneumatic tools.

The LaFollette Furnace at LaFollette, Tenn., has been remodeled and was blown in March 1. The furnace is expected to produce 200 tons a day. The Robert Field Sales Agency, Cincinnati, Ohio, is the sole agent for this furnace.

The Rogers Plating & Foundry Co.'s plant at Nos. 41-43 Illinois street, Buffalo, N. Y., suffered a loss by fire of about $4,000 on Feb. 28. The loss was partly covered by insurance.

OFFICIAL CHANGES

Made by Railway Steel Spring Co.—The Annual Report.

The annual report of the Railway Steel Spring Co., submitted at the yearly meeting on March 1, shows an increase of net earnings as compared with 1904 of $860,050, the total for the year ending December 30, 1905, being $1,949,993.57. The assets of the company are entered upon a valuation of $29,462,509.56, and the cash on hand, $1,104,030.54, when added to the surplus of $2,045,899, makes a total of $3,149,920.

The principal items in the annual statement are the following:

Assets:		
Plants	$24,560,266.58	
Merchandise	1,152,736.03	
Investments	764,838.51	
Accounts Receivable	1,847,352.70	
Other items	33,285.20	
Cash	1,104,030.54	
Total		$29,462,509.56
Liabilities:		
Capital Stock—Preferred	$13,500,000.00	
Capital Stock—Common	13,500,000.00	
Accounts Payable	295,646.25	
Reserved	120,964.15	
Surplus	2,045,899.16	
Total		$29,462,509.56
Surplus Dec 31, 1904		$1,580,870.84
Common Dividends		539,988.00
		1,040,882.84
Net earnings, 1905	1,949,993.57	
Preferred dividends	944,977.25	
Carried to Surplus		1,005,016.32
Surplus Dec 30, 1905		2,045,899.16

The report contains some interesting facts concerning the company's business. The pig iron production for the year was 172,763 tons. During this time the mines at Oxford and Mount Hope produced 93,568 tons of ore. The policy of developing the New Jersey mines has been pushed, the Elizabeth vein late in the year yielding ore averaging 62. to 63.5 per cent in metallic iron, about 0.45 per cent in phosphorus and no sulphur. The second shaft, started over a year ago, is down 325 feet; the ore body is but 100 feet lower and the company eventually expects this mine to produce as heavily as the Washington mine which is now turning out over 300 tons daily. In the latter property, however, preparations have been made to double this output. The old board of directors was retained with the exception that Archer H. Brown was chosen to the place made vacant by the death of Anderson Fowler.

All the retiring directors were retained. The newly elected board subsequently met and elected the following officers: President, W. H. Silverthorn; vice-president, F. F. Fitzpatrick; chairman, J. E. French; secretary, M. B. Parker; treasurer, F. Carnahan; assistant secretaries, T. L. Chapman Jr., and A. S. Henry. Mr. Chapman was also elected assistant treasurer.

EMPIRE STEEL & IRON CO.

The annual meeting of stockholders of the Empire Steel & Iron Co. was held Feb. 28 at Jersey City, N. J. The annual report placed the assets of the company at $5,501,662.32. The statement of profits for the year follows:

Net earnings	$135,751.47
Depreciation, improvement and repairs	44,239.51
Net profits	91,511.96
Preferred dividends	75,000.00
Balance for year	16,511.96
Previous balance	178,598.09
Balance, Jan. 1	195,110.05

A. I. M. E. Entertained By Ingersoll-Rand Co.—The American Institute of Mining Engineers was entertained at the conclusion of its convention in Bethlehem by the Ingersoll-Rand Co., at its works in Phillipsburg, N. J. A party of about one hundred and sixty-five engineers and guests were conveyed from Bethlehem to the works in a special train. After being photographed, the party was conducted through the shops in several groups, after which luncheon was served. Speeches were made by a number of gentlemen, including Mr. Jasper Rand, Mr. Edmund C. Pechin and Dr. Raymond.

CHANGE OF STATUS IN PIG IRON WARRANTS AND CERTIFICATES.

The New York Produce Exchange has adopted a new system for marketing pig iron on the exchange floor. A "Standard Foundry Contract" has been devised to reduce the trading in the lower grades of iron to the exclusion of standard foundry grades. Some fault has been found with the contracts which have heretofore been traded in because the differential between the lower grades and No. 2 foundry, has been rather less than normal with the result that trading was entirely in low grade iron.

Dalton, Nash & Co., members of the New York Produce Exchange, explain the advantages of the new contracts as follows:

"This contract is very much more desirable for buyers, inasmuch as owing to the special differentials adopted, no grade of iron lower than No. 2 foundry or No. 2 soft can be put into certificates, except at a penalty so large as to make the lower grades of iron really desirable at the price. For instance: assuming that the basis is $14.00 Alabama for No. 2, which would be $18.00 New York, for the value of the certificate. No. 3 would be valued at $12.50 Alabama; No. 4, $12.00; gray forge, $11.75; mottled and white, $10.50. At these prices it is more desirable for furnaces to sell the iron than to put it in on contract, except under extraordinary conditions. We consider this contract superior to warrants for all purposes. It will also be much better for the seller, as it will range in prices very close to the actual spot cash value of No. 2 pig iron.

"A standard foundry contract carries with each warrant for 100 tons foundry pig iron, the following cash payments in addition to freight to New York from the yard where stored on fracture grading: No. 1 foundry and No. 1 soft, 50c less than the freight; high silicon iron, 4 to 5 per cent, 50c less than the freight; No. 3 foundry, $1.50 in addition to freight; No. 4 foundry, $2.00 in addition to freight; gray forge, $2.25 in addition to freight; mottled and white, $3.50 in addition to freight.

"An allowance of 25c is made for iron of standard analysis of No. 1, 2, 3 and 4 foundry."

A Correction.—In the description of the Bignall & Keeler cutting-off machine in THE IRON TRADE REVIEW of March 1, the address of the company was erroneously stated to be Edwardsville, Pa. It should be Edwardsville, Ill.

MERGER OPPOSED

By the Cincinnati Branch of the National Metal Trades Association.

The annual meeting and dinner of the Cincinnati branch of the National Metal Trades Association was held at the Business Men's Club on Thursday evening March 1, at 6.30 p. m. The meeting was called to order by President P. G. March. The report of the treasurer was made by Mr. O. H. Broxterman, who said the financial condition of the association was in excellent shape, the report showing that there was about six times as much money now in the treasury as on the corresponding date last year.

Mr. H. H. Klusman, when called upon for the secretary's report stated that Mr. Manley, the assistant secretary, would make a full report of the last year's business, but, as he had the floor, he wished to offer a resolution, if he might be permitted to do so. The chair granted the permission and Mr. Klusman offered the following:

"Resolved:—That the Cincinnati branch of the N. M. T. A., while desiring to co-operate with all organizations in support of its principles as laid down in its declaration of principles, is opposed to any form of merger with any other organization."

Upon motion the resolution was laid upon the table until the regular program of the evening had been carried out.

Assistant Secretary J. M. Manley then read a most interesting report of the year's business. This was followed by the election of officers and the present officers were re-nominated and elected as follows: Mr. P. G. March of the Cincinnati Shaper Co., president; Mr. Si. P. Egan of the J. A. Fay & Egan Co., vice president; Mr. O. H. Broxterman, of the John Steptoe Shaper Co., treasurer, and Mr. H. H. Klusman, of Greaves & Klusman, secretary.

Mr. P. G. March, who acted as toastmaster, at this point introduced the speaker of the evening, Prof. F. X. Schoonmaker, who delivered a most interesting lecture on "Industrial China and the Orient." Mr. Schoonmaker spoke for more than an hour and held his hearers in close attention. At the close of the address, he was the recipient of many congratulations and expressions of pleasure by those present.

The resolution that had been offered was then taken up for consideration. There was practically no argument against the proposition, all of those who spoke on the question being in favor of declaring against any merger with any other association. This was brought about by the proposition which will confront the N. M. T. A. at its next convention when the matter of merging the National Foundrymen's Association with the N. M. T. A. will be up for action.

The consensus of opinion among the members of the Cincinnati branch of the N. M. T. A. is that the two associations have such a widely different set of men and conditions to deal with that such an amalgamation of interests as is proposed in the merger now under consideration is not practicable or desirable.

Those in Attendance.

P. G. March, The Cincinnati Shaper Co.
N. Chace, The Cincinnati Shaper Co.
F. X. Schoonmaker.
F. A. Geier, The Cincinnati Milling Machine Co.
E. M. Chace, The Cincinnati Milling Machine Co.
P. O. Geier, The Cincinnati Milling Machine Co.
C. W. Walter, The Cincinnati Milling Machine Co.
W. Laidlaw, The Laidlaw-Dunn-Gordon Co.
W. Thompson, The Laidlaw-Dunn-Gordon Co.
Wm. Lodge, The Lodge & Shipley Machine Tool Co.
M. Shipley, The Lodge & Shipley Machine Tool Co.
I. Rauh, The Cincinnati Electrical Tool Co.
Robert Wuest, National Metal Trades Association.
Benj. Sebastian, The Sebastian Lathe Co.
E. Greenwald, The I. & E. Greenwald Co.
M. R. Conway, Conway & Co.
I. D. Morten, THE IRON TRADE REVIEW.
F. R. Lindsley, *The Iron Age.*
H. H. Klusman, Greaves-Klusman & Co.,
Wm. A. Greaves, Greaves-Klusman & Co.
C. J. Foerster, The J. H. Day Co.
R. McEvilley, First National Bank.
O. H. Broxterman, The Jno. Steptoe Shaper Co.
Geo. Otting, The Jno. Steptoe Shaper Co.
Al. Robinson, The American Tool Works Co.
R. S. Alter, The American Tool Works Co.
V. Tresise, Ohio Pattern Works.
H. Beeler, The Bickford Drill & Tool Co.
H. C. Hoefinghoff, The Bickford Drill & Tool Co.
F. E. LeBlond, The R. K. LeBlond Machine Tool Co.
Oscar Mueller, Mueller Machine Tool Co.
Walter Dolle, The National Machine Tool Co.
I. T. Howe, Hobson-Houghton Co., N. Y.
L. E. Rechtin, L. E. Rechtin & Bro.
Wm. Herman, The Fosdick Machine Tool Co.
L. C. Twachtman, The Fosdick Machine Tool Co.
O. J. Shafer, The Globe Pattern Works.
Emil Von Wyck, Von Wyck Machine Tool Co.
Jno. W. Neil, The Jno. H. McGowan Co.
B. B. Quillen, The Cincinnati Planer Co.
G. Langan, The Cincinnati Planer Co.
N. P. Fenner, American Valve & Meter Co.
F. S. Baldwin, Cincinnati Machine Tool Co.
S. Schauer, Cincinnati Machine Tool Co.
August Teuchter, Cincinnati Machine Tool Co.
W. J. Hall Jr., Cincinnati Machine Tool Co.
P. T. Laws, United States Cast Iron Pipe Co.
G. W. Steiegler, United States Cast Iron Pipe Co.
L. Pellitier, Resident Mgr., *Railway Age,* Pittsburg.
C. F. Kleinsmith, United States Electric Tool Co.
L. G. Robinson, J. A. Fay & Egan Co.
I. E. Hirst, J. A. Fay & Egan Co.
C. N. Foster.
H. Ritter, The Lunkenheimer Co.
C. Ritter, The Lunkenheimer Co.
G. F. Stewart, The Bradford Machine Tool Co.

M. K. Barnum, assistant to the second vice president of the C. B. & Q. Railway, addressed the engineering students of Purdue University on January 29. His subject was "Engine Failures."

MERGER OF BOILER PLANTS REPORTED.

Reports have been current of late, evidently with foundation, to the effect that negotiations were under way looking to the consolidation or the securing of a working agreement for the plants of the Stirling Consolidated Boiler Co. and the Babcock & Wilcox Co. The latter has a capital of $3,000,000 and operates extensive shops at Bayonne, N. J. The Stirling Co. was organized in October last to succeed the Stirling Co., of Chicago, and the boiler department of the Aultman & Taylor Co. with plants at Mansfield and Barberton, Ohio. Its capital stock is $4,875,000. According to current reports the capitalization of the consolidated company is to be $15,000,000. Both concerns make water tube boilers and enjoy a heavy foreign trade as well as in this country.

Concerning present negotiations, O. C. Barber, president of the Diamond Match Co. and chief executive officer of the Stirling Co., is quoted as follows: "There will be no consolidation; neither will there be any secret trade arrangement,—in fact, I do not care to say just what the arrangement is." He states, however, that the facilities of the Barberton plant are to be greatly improved and its capacities enlarged. "The amount to be expended will not be less than $300,000 and the time for the improvement will be as soon as work can be begun."

NEW NAME ANNOUNCED.

The Quincy, Manchester, Sargent Co. is the new name under which the business of the Railway Appliances Co. is now being carried on. The new organization includes the Railway Appliances Co., of New York and Chicago, the Q. & C. Co., the Pedrick & Ayer Co., The Bryant Metal Sawing Machine Co., the Q. & C. Pneumatic Tool Co. and the Aper Mfg. Co. with factories at Chicago Heights and Plainfield, N. J. C. F. Quincy is president of the new organization, George H. Sargent vice president and Percival Manchester secretary and treasurer. The list of devices manufactured by the new company is extensive.

According to Consul-General Seeger of Rio de Janiero, the iron works at Ipanema, Brazil, are to be rented. These works are the property of the Brazilian government. They are said to have been erected at considerable cost, but have been idle for several years. The plant consists of a large mine of iron ore and an iron foundry. It was originally intended for ship building purposes.

PERSONALS.

John J. Davison has resigned as assistant superintendent of the Lorain, O., foundry.

George A. Baird, formerly general sales manager of the Republic Iron & Steel Co., has been elected president of the Western Exploration Co.

Richard Peters, Jr., has resigned his position with the Georgia Iron & Coal Co., to become associated with the Talladega Marble Co., Talladega, Ala.

President A. C. Dinkey of the Carnegie Steel Co. and John R. Scott, Cleveland sales agent, have returned from an extended trip through the south.

J. A. Prescott, southwestern manager, is in charge of branch offices which the Dayton Pneumatic Tool Co. has opened at 707-8 Lincoln Trust building, St. Louis, Mo.

Morton H. Anderson has become superintendent of the Reliance works of the Allis-Chalmers Co., and resigned the superintendency of the De La Vergne Machine Co., New York.

H. K. McLean, for a number of years general superintendent of the Link Belt Machinery Co., Chicago, has become consulting engineer for the H. W. Caldwell & Son Co., Chicago.

John P. McCrea, on March 1, became manager of the sales department of the Parkersburg Iron & Steel Co., Parkersburg, W. Va. He was formerly connected with the American Sheet Steel Co.

George H. Baush, vice president and general superintendent of the Baush Machine Tool Co., Springfield, Mass., since its organization in 1896, has resigned and will not be engaged in business for some time.

R. D. Perry has resigned as superintendent of the works of the Western Automatic Machine & Screw Co., Elyria, O., after a service of 23 years in that connection. He will engage in manufacturing on his own account.

John F. Wallace, formerly chief engineer of the Panama Canal Commission, has become connected with the Westinghouse interests and will have charge of the building of extensive electric lines in the east.

Major Cassius E. Gillette, one of the best known engineers in the United States army, has resigned his commission to become chief engineer of the bureau of filtration of Philadelphia at a salary of $17,000.

Fred W. Coxe, formerly one of the assistant sales agents of the Cambria Steel Co. at Cleveland, is in charge of the sales office recently opened by that company in the Ellicott Square Building, Buffalo. His territory is western New York and Ontario.

Mel Butler, for some time chief clerk to General Manager Kebler of the Colorado Fuel & Iron Co., in the fuel department, has been appointed superintendent of the company's interests at Tercio, Colo., where he will have charge of extensive mines and coke ovens.

James E. Jopling, mining engineer of the Cleveland-Cliffs Iron Co., has returned from a five months' tour of Europe, during which time he made a study of the mining methods of Germany, Norway, Austria and other countries.

Arthur Giesler, formerly chief engineer and designer of hydraulic installations for the Platt Iron Works Co., Dayton, O., has opened an office at 170 Broadway, New York, as consulting engineer, making a specialty of hydro-turbine power plants and hydro-turbine pumping stations.

Albert Ladd Colby, who recently opened an office at 477 Central Park West, New York, as consulting and inspecting engineer and iron and steel metallurgist, was formely secretary of the Association of American Steel Manufacturers, which position he has resigned. He was for 18 years connected with the Bethlehem Steel Co.

W. O. Jones, general manager of the purchasing department of the International Harvester Co., Chicago, has tendered his resignation to take effect June 1. His health has been bad for some months, and to permit him to regain it the company reluctantly accepted his resignation. Mr. Jones is now in southern California, and after an indefinite stay there, intends starting in business for himself.

OBITUARY.

George C. Symington, a member of the firm of the Detroit River Iron Works, died Feb. 26 at his home in Detroit. He was one of the younger business men of the city.

Andrew H. Hammond, president of the Hammond Reed Co., Worcester, Mass., died March 1 at the age of 75. In his early life he was engaged in the foundry business, which he left to take up the manufacture of organ reeds.

Thomas H. Stephens, who claimed the distinction of being the first man to roll a steel rail west of the Mississippi, died March 1 at the home of his son in Chester, W. Va. For 21 years he was general manager of the St. Louis Ore & Steel Co., being later in charge of the mills at Middleport, O., and Pittsburg.

Michael E. Smith, one of the best known mining experts of Colorado, died at his home in Denver, March 1. The early years of his life were spent in Michigan, from which he went west where for 30 years he was prominent in the smelting and refining business.

Joel S. Webber, aged 74, a prominent manufacturer of Holyoke, Mass., died March 1 at his home in that city. In addition to being a member of the firm of Beebe, Webber & Co. for 40 years, he was president of the Barlow Mfg. Co. and of the Goddard Machine Co., besides being interested in many financial institutions of Holyoke.

Edwin Gilbert, president of the Gilbert & Bennett Mfg. Co., died Feb. 28 at Crescent City, Fla., at the age of 84. He was the inventor of the power looms for weaving wire which practically revolutionized the industry and made the company of which he was the head one of the largest manufacturers of wire goods in the country. He had given much to charity.

George H. Geyer, formerly superintendent of the south side plant of the Jones & Laughlin Steel Co., Pittsburg, died Feb. 26, after a long illness. From a cabinet maker in the pattern shop of the Jones & Laughlin Steel Co., his inventive genius attracted the attention of the firm and he was promoted to the position of superintendent of the plant. Under his direction many labor saving devices were installed. He is survived by a widow and two sons.

Albert H. Heller, professor of structural engineering at Ohio State University, Columbus, died Feb. 27 after a long illness. He graduated from that institution in 1890 and after service with a number of bridge concerns as draftsman, in 1899 became chief engineer of the Youngstown Bridge Co. The following year he was made assistant to the vice president of the American Bridge Co. and later was placed in charge of the operating engineering department of that company. He returned to the university in 1902.

Henry Mason Quig, formerly chief engineer of the Shoenberger Steel Co., now a part of the United States Steel Corporation, died last week at Pittsburg. He was 71 years old and was identified with the Shoenberger works about 30 years. He was born in Philadelphia and served several years in the navy when a young man. After leaving the navy Mr. Quig removed to Pittsburg and remained with the Schoenberger company until the plant was sold to the American Steel & Wire Co. For several years he has been retired. Mr. Quig is survived by a widow, two sons and two daughters.

An Interesting Foundry Plant.

BY AN EDITORIAL REPRESENTATIVE OF THE IRON TRADE REVIEW.

The Isaac G. Johnson Co.'s plant at Spuyten Duyvil, N. Y., is one of the most interesting foundries in the country.

It was started nearly fifty years ago by Mr. Johnson, and originally, the entire product was malleable iron castings. As Mr. Johnson's sons grew up, they were taken into the company, and at the same time, new lines were added. The company always kept at the forefront of the latest and best foundry practice, believing that there is always a market for the highest grade product. Today, the output of the plant consists of steel castings, malleable iron castings and gun iron castings.

The company has grown until it occupies all of the site formerly occupied by the rolling mill formerly located on the property, and the equipment is of the best. Under the one management, are produced steel castings of any composition, or to fill any specification, malleable and gray iron castings. The equipment includes crucible furnaces, modified open-hearth furnaces, Tropenas converters, air furnaces for gray iron and also for malleable iron, in addition to which, there are cupolas for melting the stock for the converters, or for making gray iron castings.

The location of the plant is especially advantageous, as it is on the tracks of the New York Central railroad, and also has tide water facilities. A large portion of the supplies are received by water. The molding sand, clay, etc., come in by water, are unloaded by special machinery, and stored in a building, which has been specially designed for the purpose. The material is taken in small cars elevated above the roof of the building, when the cars are run out to positions above the various bins, and then discharged through hatches in the roof of the building. The sand for use is taken on industrial railway cars to the various sand preparing departments in the different sections of the works. For the steel practice, of course, there is installed a complete sand mixing and grinding plant, for the preparation of the molding sand, core sand, etc. Similar plants are also installed for the other foundries.

The steel foundry proper, consists of two long parallel buildings, each spanned by traveling cranes. The converters are located at one side of one of these buildings, and the core department is located between the two buildings, so that the cores have to be carried but a small distance in delivering them to the molders. The core ovens are arranged between the runways of the cranes in the two departments. For use in making heavy cores a power jib crane is installed in the core making department. For drying the molds for the steel castings, ovens are located at various points along the sides of the foundries.

At one end of one of the bays of the steel foundry proper, are located the furnaces for making open-hearth steel.

For the annealing of steel castings, a special department is provided adjoining the large steel foundry proper. This department is equipped with several different styles of annealing ovens for annealing both heavy and light castings.

The cleaning department is also located at one side of the steel foundry, between the foundry and the annealing department. Steel of special composition is frequently made in furnaces in other parts of the works, and especially, crucible steel.

In this connection, it will be of interest to know that it was the Isaac G. Johnson Co., which developed the armor piercing shells now used by our government. The company undertook a series of experiments for the government, in which they made a large number of shells of various composition. Finally, it was discovered, in connection with these experiments, that the application of a block of soft steel to the point of the finished shell would protect the point during the first impact, and enable it to penetrate the hardened armor. A patent for this soft block, attached to the point of the shell was taken out by the Isaac G. Johnson Co., and subsequently sold to the government. This, however, is only one of the many special lines which have been worked out by the company for the benefit of various customers.

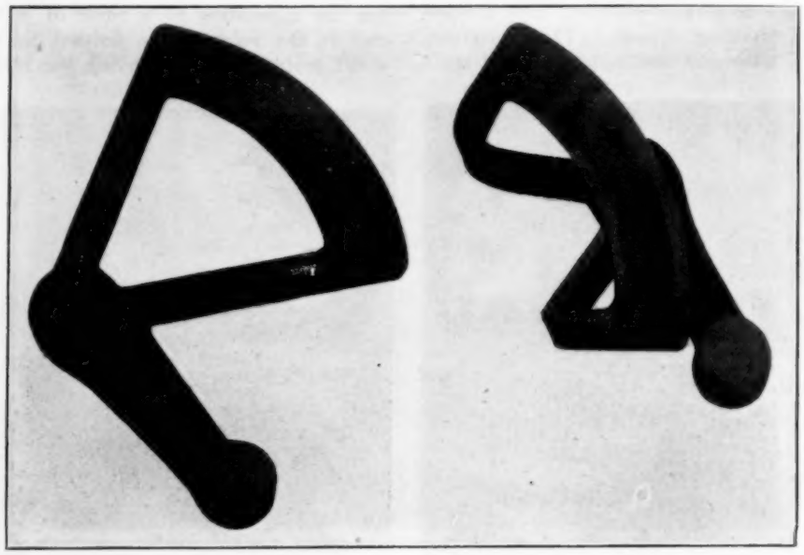
One of the accompanying ilustrations shows two castings for automobile parts. These castings were picked out of a pile of miscellaneous castings on the floor of the cleaning room by the writer. They were taken to the blacksmith's shop, and one of them bent cold, as shown in the illustration, without rupture. This is simply a sample of the light and accurate castings of strong and reliable metal, which are made by this company, and many more examples might be given.

The malleable department is no less

CORE DEPARTMENT AND PART OF THE FOUNDRY.

A LARGE MALLEABLE CASTING.

interesting than the steel casting department. This company has never made an attempt to excell in tonnage, or to meet competition for a cheap grade of castings, but produces the best possible malleable castings of any required size or shape. The iron is all melted in straight draft or air furnaces, and the annealing carried on in specially designed annealing ovens. The process is not hurried at any point, but plenty of time it taken to produce the best possible work. The average foundryman is used to consider malleable castings of 50 or 60 pounds as about the limit of the possibility in this line, but the Isaac G. Johnson Co. is prepared to turn out malleable castings of almost any required size, providing the design of the piece is such that there



A STEEL CASTING SHOWING HOW IT COULD BE BENT COLD.

are no great differences in the thickness of the metal.

One of the accompanying illustrations shows a ring for a special heater or boiler, which was turned out from the malleable department. These rings are made up to nearly 6 feet in diameter, and are remarkably good examples of foundry practice. The one shown happens to be one of the medium size castings, but, when it is compared with the man standing at the side, who is a large man, the size of the casting can be judged. Some of the other illustrations show a general view of the main molding floor of the steel foundry. A view across one end of one bay of the foundry shows one of the molding ovens, a sand preparation plant, and a view in the core department.

The Isaac G. Johnson Co. has never had any labor troubles, nor is it likely to, for the working force has been gradually drawn together as the company has grown, and every one with whom the writer talked was very much interested in the plant and the success of the company for which he worked.

A profit sharing plan has been in force for a number of years, by which the superintendents and foremen share in the profits of the concern, in proportion to their wages, and also in proportion to their ability as dividend earners. This tends to keep the men interested and careful, and the company does not care to have anyone in its employ, who does not show sufficient interest to work for the welfare of the concern. The proportion of profit divided is a good percentage of the year's wages, and is a bonus well worth striving for.

At stated times, those in direct charge of the work hold a meeting, at which, all of the points of the business, which have come up since the previous meeting are carefully discussed, and, at this meeting, all points of difference between employes and employers are settled. By working in a friendly spirit, in this manner, everything in the plant is kept in harmony.

The Isaac G. Johnson Co. has been not only successful, but, it has been conservative, and has always stood for the best possible product from its plant, and a policy of this kind is sure to win in the long run.

Steel for Korean Bridges.—One of the largest foreign contracts for steel ever brought to this country was awarded recently by Japanese interests which are building an extensive railroad system in Korea. The order involves 15,000 tons of steel for the construction of bridges and spans. It is understood that the material will be supplied by various plants of the American Bridge Co. and that the negotiations were conducted by the U. S. Steel Products' Export Co.

OPEN-HEARTH STEEL CASTINGS.—III.

BY W. M. CARR.

Acid Furnace Brick Work.

The furnace body wherever subjected to uniform, high temperature is lined by first grade silica bricks. Piers and outside walls of the structure below the charging floor can be red brick; linings of flues and chambers including checkers are No. 1 fire brick. Silica brick will not answer for checkers because they will crumble under the varying ranges of heat.

The hearth pan is lined with fire brick to the depth of nine inches or more, but above metal line of a fully lined hearth, the sides, walls and roof are silica. With the brick work complete the furnace is first dried moderately and carefully with a wood or soft coal fire kept going for a few days.

The gas or oil can then be turned on slightly at first and then gradually raised to nearly full working temperature. Layers of silica sand of the quality described in preceding chapters are then spread over the bottom. They are put in in succession and between each interval the flame is allowed to set or sinter the sand until hard. This operation is repeated until the hearth lining will have reached a depth of 18 to 20 inches including the fire bricks. A hearth so lined with a suitable refractory ought to last almost indefinitely under favorable conditions.

There will be occasional patching of slag line and bottom, with sand at the end of each heat, the extent of which will be controlled by the conditions and character of stock used in melting. A hearth properly lined must be set hard enough to resist attrition by the charging of melting stock. Under skillful handling an acid furnace ought to turn out normally 950 heats or more in a campaign at the rate of at least 3 heats per working day.

Basic Furnace Brick Work.

The designation basic is rather a misnomer. The nature of the basic process requires a lining of such materials that will resist the fluxing action of limey slags and vapors necessary to purify and refine phosphoric melting stock. Unfortunately no materials are commercially available to completely line a furnace body, so recourse can only be had to a hearth lined with basic materials, with roof, sides and walls of furnace body above the slag line consisting of silica or acid bricks, the reasons being that bricks of basic or neutral material, such as magnesite or chrome, while being refractory, do not give as good results as silica bricks, owing to a liability to crumble

if placed in the walls or roof. Therefore a basic furnace is part acid and part basic lining.

With the exception of the furnace body in regard to brick work, the construction is the same as an acid furnace. The hearth pan is first lined with fire brick followed with magnesite bricks. Usually the bottom is lined with ground magnesite. It may be mixed with about 5 per cent of anyhdrous tar and rammed in to form the hearth and then slowly and carefully brought to full temperature; or the magnesite may be put in loosely in layers and gradually sintered. A small percentage of ground basic slag is sometimes mixed with it to insure a partial fusing or sinter.

A magnesite hearth while costly gives the best results in service and will sinter hard enough to withstand rough usage by charging of stock. Where the magnesite bricks meet the silica bricks of the walls, a parting of chrome ore is placed as a neutral separation of the two to prevent a fluxing liable to ensue between them at full working temperature.

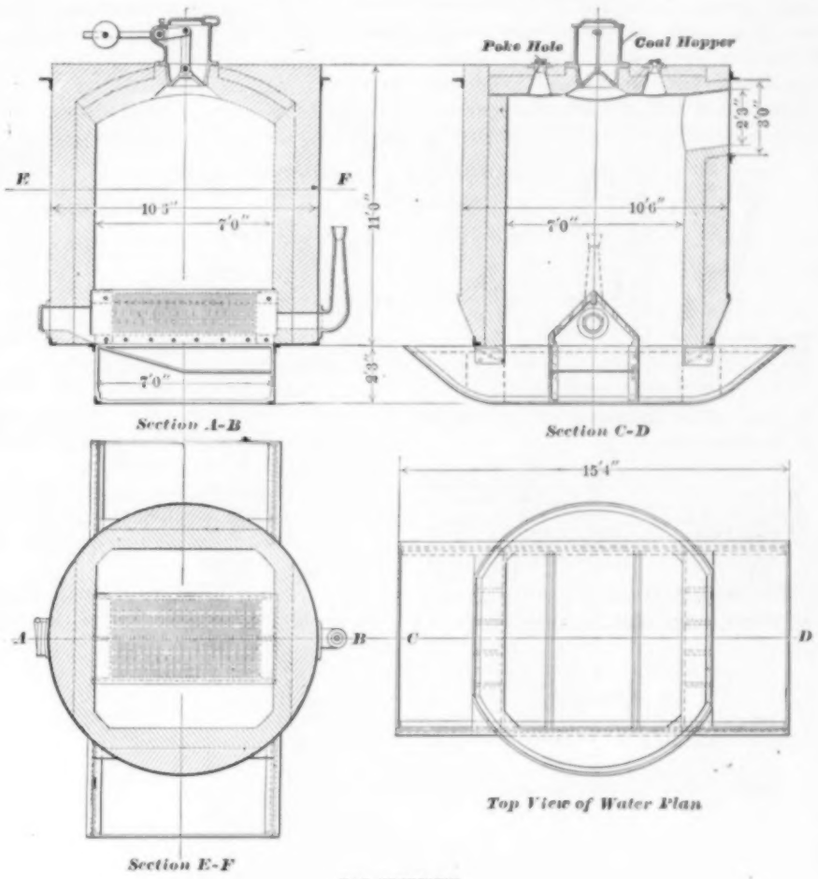
There will always be some scorification of the hearth at the slag line and an occasional formation of holes in the bottom, due to the action of silicious matter carried in with the stock. The repairs to the hearth are made with raw dolomite on the slag line, and with ground magnesite on the bottom. Dolomite being so much cheaper it is fully as effective as magnesite at the slag line. In the raw state it is not recommended for bottom repairs, because at a high temperature it is calcined, contracting greatly in bulk and for that reason holes in the bottom cannot be satisfactorily filled with it. Under the heat of fused stock it would loosen, float upwards, and leave the condition as bad as before the patch.

Undue hearth scorification can be controlled by proper care in the character of stock. Hence the consumption of refractories for hearth patching can be kept at the minimum figure. With proper care a basic hearth of magnesite should last indefinitely, and the life of the brick work of the roof and walls ought to yield 400 or more heats at 3 heats per day.

Fuel Accessories.

As the choice of fuel may rest between producer gas or oil, a description of the operation of either will be briefly considered. Referring to the cut of a gas producer a general idea will be formed of its construction. The one shown is of the simpler kind and entirely hand fed and poked. In some of the large rolling mills coal is fed in continuously by a mechanical device, and the bed of fuel is poked by a mechanical contrivance. The principle of operation is the same in either case so far as making gas goes.

For a continuous supply of gas, air and steam are forced through an incandescent bed of bituminous coal on top of which is fed at regular intervals fresh coal. Frequently the mass is poked with long bars to break up the decomposing coal and to prevent holes



GAS PRODUCER.

or passages being formed which might allow air to pass through them and dilute the gas. In the vicinity of the grate, which is water sealed, the fuel is completely burned, while that near the top gives off its volatile matter, forming copious volumes of smoke with some tarry matter. As the fuel descends towards the grate it is gradually burned to ash.

For proper working conditions the bed of coal should be kept at a constant height, and vigorous poking should be frequently and persistently followed.

The object of water-sealing the grate is to permit the amount of air necessary to gasify the coal, to be under control at all times.

The use of steam lessens the temperature of combustion at the grate and so lengthens the life of the grate bars. At the same time the steam chemically combines with the fuel to form water gas as will be shown. It also prevents the formation of clinkers making it easier to keep the fires clean.

To make good gas the fuel must be hot, and close attention must be given to the admixture of air and steam forced into the producer. Too much steam tends to cool the fires and pass into the flues, undecomposed, causing an extravagant loss of fuel efficiency. A deep, hot bed of coal will yield the richest gas.

It will not be amiss to consider some of the chemical changes that take place in a producer. Roughly the bed of fuel in it can be divided into two zones. The lower one, nearest the grate, can be called the CO_2 zone and the upper one the CO zone. The air coming into union with the fuel near the grate forms.

$$C + 2\,O = CO_2.$$

CO_2 is of course, non-combustible but as it passes upwards it combines with the glowing carbon of the CO zone and absorbing some becomes

$$CO_2 + C = 2CO.$$

the latter constituent forming the larger volume and chief calorific agent of producer gas. By the action of steam we have

$$C + H_2O = CO + 2\,H \text{ (water gas)}$$

The calorific value of this last product is greater in equal volume than the CO formed in second equation but at the expense of the heat in the bed of fuel. The following is an analysis of producer gas.

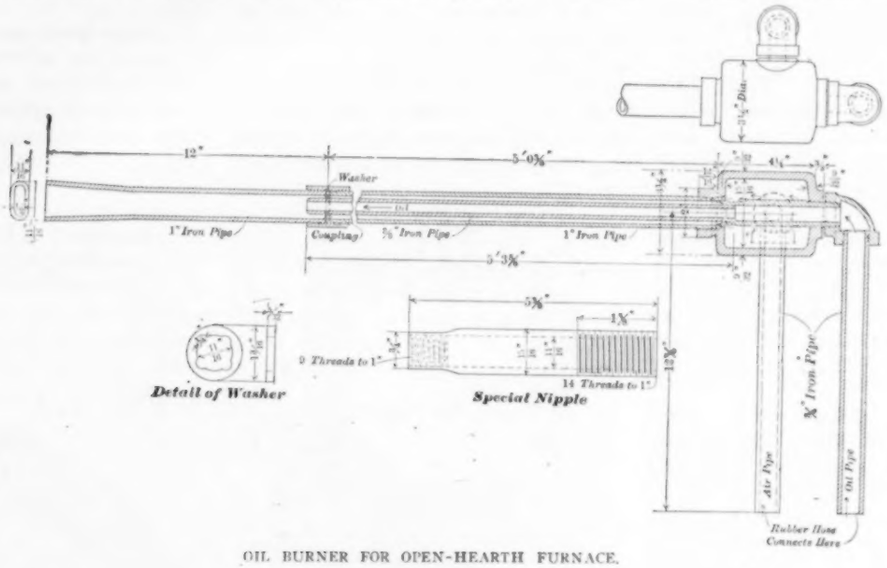
C O	27.00 per cent by volume
C O_2	5.00 per cent by volume.
H	10.00 per cent by volume.
C H_4 + C_2 H_4	1.50 per cent by volume.
O + N by diff	56.50 per cent by volume.
	100.00 per cent. by volume.

The amount of oxygen in the gas will be about 1 per cent, and represents the air that passes through the producer uncombined. The index to the proper working of the producer is the amount of CO_2 present. Under the most advantageous conditions it will rarely fall below 2.5 per cent and with bad conditions it will exceed the average of 5 per cent. The causes of an excess are due to insufficient poking, a shallow fire and faulty brick work allowing air leakages to ignite the gas before it can be delivered to the furnace.

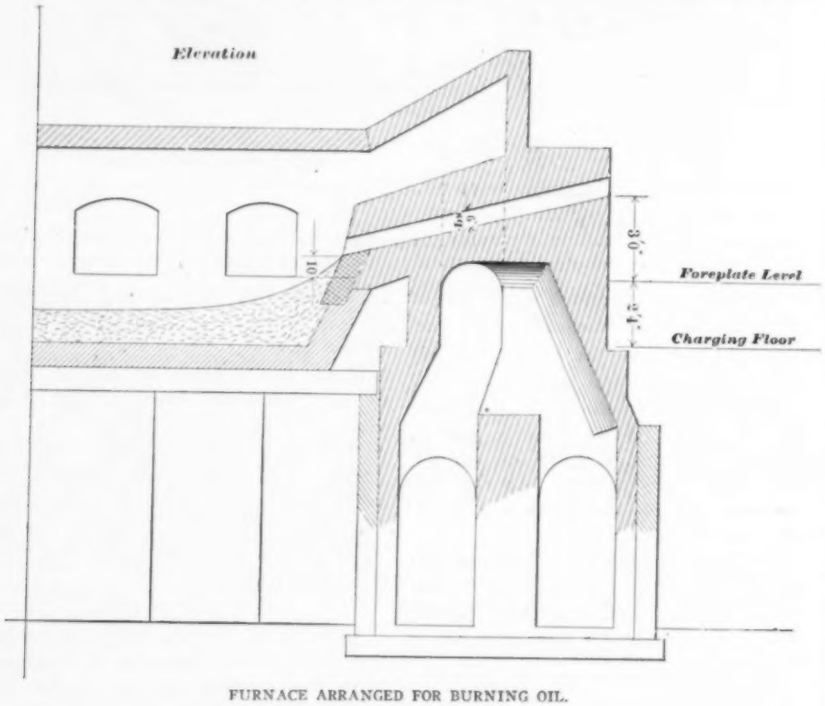
At the best, producer gas is unsatisfactory, and the steel melter is always at the mercy of the vigilance or lack of it, of the gas man.

One ton of bituminous coal yields 160,000 to 170,000 cubic feet of gas with a calorific value, at the producer, of about 137 B. T. U. per cubic foot. The gas in traveling to the furnace loses heat units at a variable rate. The actual amount of gas delivered to the furnace is hard to determine, owing to leakage and the consumption in drying ladles.

Liquid fuels, such as crude petroleum or residuum, possess a high calorific value, usually expressed at 14,000 to 17,000 B. T. U. per pound of oil. Because the oil being delivered directly to the furnace (see oil burning device and furnace construction for same) and igniting, when atomized by steam or compressed air, yields its entire thermal efficiency to work with no intermediate losses as is the case with gas, the value of oil over the latter is marked.



OIL BURNER FOR OPEN-HEARTH FURNACE.



FURNACE ARRANGED FOR BURNING OIL.

It is difficult to make an actual comparison between oil and coal for steel melting on the basis of the cost of a ton of metal produced. The figures may be in favor of coal in certain localities, and in favor of oil in others. Yet the advantages of oil over coal in working results are so pronounced that discrepancies in cost against oil are offset by its usefulness.

Ignoring the relative costs, the principal points in favor of oil against gas will be considered.

First, the higher thermal value. A cubic foot of gas will yield 137 B. T. U. Taking 16,000 B. T. U. as an average of one pound of oil and allowing a cubic foot of oil at 57 11-100 pounds then 57.11 × 16,000 = 913,760. B. T. U. a substantial gain in favor of oil against an equal volume of gas.

Second. The simplicity of installation. One furnace will require a storage tank with a capacity of about 17,000 gallons, from this the oil is pumped to the burner (see cut) which essentially is the producer in the sense that the arrangement of the burner permits a necessary atomization of the oil by steam or compressed air before ignition. It is superfluous to make a further comparison on this point, in view of

the crudity of the gas producer.

Third. The use of oil lessens furnace repair costs and allows longer campaigns before shutting down for general repairs. This point alone, is perhaps the strongest one in favor of oil. Conditions of brick work in regenerator chambers do not require the same attention with liquid fuel as they would with gas. That is to say, should there be leakages in the partition wall between air and gas chambers, they can be ignored, using oil; but with gas they would necessitate a shutdown of the furnace to repair them. The same applies to ports and downtakes.

Fourth. The character of the oil not being subject to the same latitudes of irregularity as the composition of the gas, there results a decided gain in the certainty of the furnace's work. The temperature of the bath is under control, and regularity of output can be expected—a feature not so dependable with gas.

Fifth. The labor cost is greatly lowered. One man per working day attends the pumps. In the gas house there will be a foreman and several laborers to feed and poke the fires, and to wheel away the ashes. The labor in unloading and stocking coal is also eliminated. With these features can be mentioned the removal of the attendant dirt and smoke with gas producers; the loss of time in cleaning gas mains and other conditions that would occupy too much space to mention. Oil fuel will also be useful for drying ladles, firing annealers, core ovens, etc.

JONES AND LAUGHLIN PURCHASE.

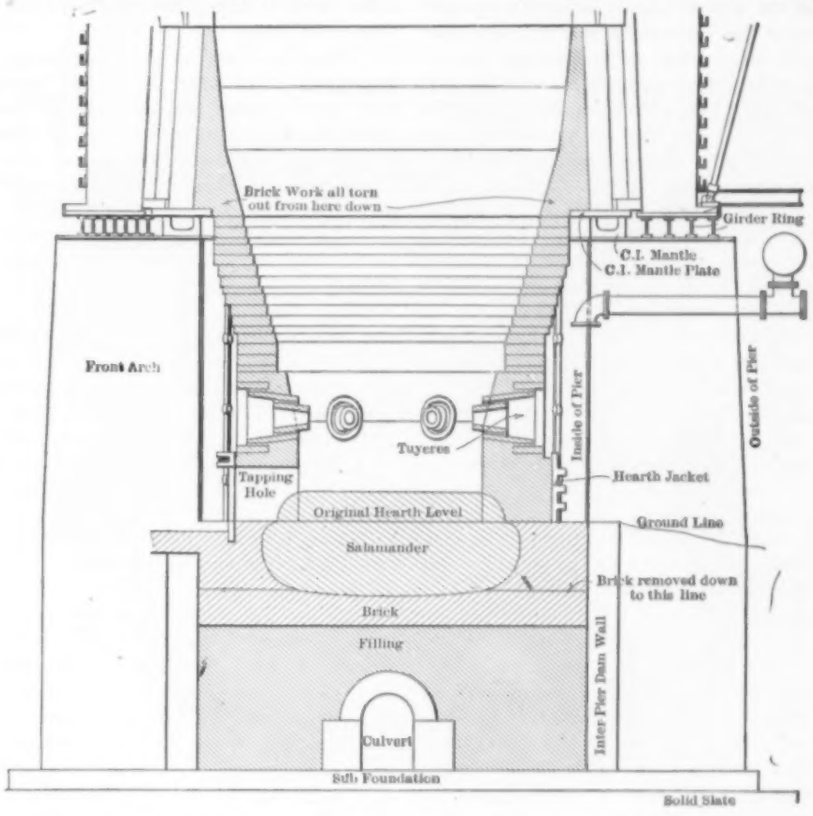
The Jones & Laughlin Steel Co., of Pittsburg, has purchased 5,000 acres of land extending two miles along the Ohio river between West Economy to Aliquippa, about 25 miles down the Ohio river below Pittsburg. This purchase has been under negotiation for some time past, but was not completed until within the past two weeks. While the Jones & Laughlin Steel Co., will say nothing about its plans regarding what will be done with the property, it is more than likely that some time in the future it will be used for extensions to the present immense plants in Pittsburg. The property is on the Pittsburg & Lake Erie raiload side of the Ohio river.

The H. K. Porter Co., builder of light locomotives, has decided to move from the south side, Pittsburg to a newly purchased site near Economy, Pa., The big locomotive plant will be moved within a short time to the new location.

THE REMOVAL OF A SALAMANDER FROM A BLAST FURNACE.

The removal of a salamander from a blast furnace is an operation usually attended with considerable trouble. The removal of one weighing 135 tons from an old fashioned type of furnace is the subject of an article in the *American Machinist* of Feb. 22, by Mr. John J. Smith. An abstract of this article follows:

Some reference to the construction of the furnace is necessary, and it may be stated at the beginning, that this is of the very old-fashioned order, which has now almost entirely disappeared, in which the whole construction is of brick, piers taking the place of the more modern iron columns, and a brick jacket heavily banded, replacing the steel plate shell, with which we are familiar.



CROSS SECTION OF FURNACE SHOWING POSITION OF SALAMANDER.

Construction of the Furnace.

The construction of the furnace and position of the salamander are clearly shown in Fig. 1. When first built, the spaces between the piers were spanned by Gothic arches, as was the custom in brick furnaces, many years ago, but, within more recent times, the furnace has been rebuilt from the piers up. The arches were done away with, and a brick jacket was started on plates resting on four rings of I-beams, very heavily fish plated together, so as to resist the swelling action of the furnace. Inside of these four rings, rest the cast iron trough shaped beams called mantels, which support the lining independently of the brick jacket, these also being fastened together by a special connection of enormous strength. There are six piers separated by these spaces still called arches, though they are archer no longer, the piers and arches being of the same size, with the exception of the front arch, which is considerably wider, to give more room. From the inside corners of the piers run walls, connecting them with one another. These walls serve to hold in the filling beneath the brick hearth, and determine the shape of this hearth, which, of course, in plan, is a 12-sided polygon, with sides, approximately, equal, except the front one, which is longer. This hearth is a solid mass of fire brick, 5 feet thick, and on which is built what is known as the crucible of the furnace. This is the vertical circular portion, extending up to the level of the tuyeres, and above this, the sloping portion, extending to the mantels, is known as the bosh. These are the parts of the furnace exposed to the greatest destructive activity, and have to be renewed most frequently, at intervals from two to five years in good practice. The crucible is built of solid fire brick, with walls of a thickness of about 3 feet, surrounded by heavy cast iron hearth plates, strongly bolted together, while the bosh above the tuyeres is built of fire brick about

two feet thick with rows of water-cooled plates, at intervals of about a foot and a half, with heavy bands on the butt of every row of bricks.

The Formation of Salamanders.

It must be stated that sometimes a furnace will work much hotter in the bottom than at others, in which case, the iron and cinders will dissolve away the fire brick, and eat down to a considerable depth, also eating outward at the same time, and sometimes, eating through to the surface outside the furnace walls, making a "breakout," which furnacemen so much dread. At other times, the furnace will work relatively cold in the bottom, and will build up a mass of iron on the hearth, which will refuse to melt out. The reason for this action is not fully understood, and will simply have to be taken as a fact. The mass of iron left in the hearth when the furnace is blown out for repairs, has been known from time immemorial as a "salamander."

When the furnace under discussion was last blown out for the rebuilding of the hearth, crucible and bosh it was after a blast in which the bottom had been constantly very high so that the top of the salamander was about 18 inches above the true hearth level. On several occasions, when the furnace had been repaired, the top of the salamander had been just about at the true hearth level, and the central portion of the mass was left in place, and brick fitted to it, around the sides, to restore the hearth to its proper height, outside of it. The result of these two circumstances was that the salamander, made during the last blast, was made on top of the one made during the previous blast, and the surface of the latter, having, of course, been fused, the new salamander was absolutely fused to it, so that, except around the outside, where the shape was, as I have indicated, there was absolutely one homogeneous mass. The question has been asked whether this mass was of iron or whether it was more or less mixed with coke, fire brick, lime, cinder, etc., and to this, I have to say, that the portion under discussion, and that which I have shown in the drawing were solid cast iron, and nothing else.

Beginning Operations.

It will be understood that the hearth plates had been removed, the tuyeres taken out, and the crucible and bosh walls, bands, and cooling plates, all had been torn down, and all below the level of the mantels, so that the furnace was open from side to side like a rotunda, supported on pillars. We had had previous experience with salamanders weighing as much as 35 tons, and the problems of the job were, therefore, not new in starting after this one. They simply consisted of digging as long as the material could be dug or gadded in the center, and then after solid iron was reached there, continuing the same process down the sides, so as to expose the structure of the salamander, after which, to gad it up from its bed, drill it and break it with dynamite was a comparatively simple matter. The distance to which it was necessary to go around the sides, in these cases, was small, generally not over a foot or 18 inches, and the digging, therefore, was comparatively open and easy. It will be understood that this digging refers to the digging and gadding out of the fire brick in the polygonal space between the piers and inter-piers, dam walls and the sides of the salamander, spaces two or three feet wide.

In digging down, as the mass became more and more solid, containing more iron and less other material, large pieces were exposed, which were not a part of the main salamander, or at least, were attached to it so slightly, that they could be detached without unusual difficulty. These pieces lay in the relation of onion peel to an onion, although much thicker in proportion, and a number of these were removed weighing from one to four or five tons, each. When the cracks, (filled with some material not iron) between these pieces and the salamander were exposed by digging and gadding, dynamite was put in, and the pieces were shot loose from the main mass, and lifted out. As we proceeded, it became evident that a still deeper removal from the ring of fire brick between the salamander and the piers was necessary, and a steam driven rock drill was brought into requisition, with which holes were drilled into this hard mass, and by the application of small charges of dynamite, these were shot away, without injuring the piers, a matter of prime importance, which it was necessary to keep continually before us.

It is necessary to say that this fire brick, exposed to the action of the iron becomes tremendously hard, tough and heavy, more like a granite rock than fire brick, so that the removal of this alone was a matter of considerable difficulty. The large pieces of "onion peel" required about two and a half days from the time that the surface of the salamander was exposed, the force being rather short and the working space very cramped. As the digging process proceeded, without reaching the bottom of the salamander, it became evident that it was of unusual size. It may be stated here, that subsequent measurement showed it to be 5 feet deep by 12 feet in diameter, corresponding to a weight of 135 tons, this weight being independent of the pieces of onion peel already removed, probably fifteen or twenty tons more. Knowing that drilling would be necessary to break this mass, and having no portable air or steam driven rotary drills at hand, we set about getting these by wire. Two were ordered, but did not arrive in time to be of service in the operation.

Drilling the Blast Holes.

Without waiting for the arrival of these drills, a heavy timber was put across the furnace from pier to pier, centrally, about 3 feet above the surface of the salamander. Two bars of one-inch square special high speed steel had been procured for this job, and had been forged into old-fashioned flat-lip drills, with square taper shanks to fit the sockets of the powerful special ratchets, kept at hand for this and similar jobs. Three of these were set at work, with three men on each, and kept going all day, and nearly the same at night, as our force would permit. A row of holes was drilled straight across the top of the salamander about 15 inches apart, eight in all, and all started, with the intention of going to the depth of 18 inches. The iron was hard and tough, and our impatience great, so that some of the later ones fell short of this depth, by a couple of inches.

I have outrun my story in two particulars: The steam driven rock drill was set up to strike what seemed to be a seam between the top and bottom salamanders, and drilled in this. It got in only a short distance before it was practically in solid iron. By sticking to it, we got in, perhaps, 12 inches in this way, but the progress was slow and the noise and inconvenience great; moreover, the hole did not go where we wanted it, in the line with the others, across the top. This hole was subsequently loaded and fired, but, while it broke off a piece of half a ton, or so, it had no marked effect on the final solution of the problem.

Drilling with an Electric Arc.

In recent years, advantage has been taken of the electric arc to bore holes through the walls, and into the tapping holes of furnaces, which have been partially chilled. The best results have been obtained with alternating currents of 50 volts or less, and with 1,000 amperes of current, the carbon rod being 3 inches in diameter and 6 feet long. An electric plant was available, which furnished 180 amperes direct current at 220 volts. For this purpose, carbons 1½ inches in diameter and 4 feet long were obtained. When the magnitude of the salamander was finally revealed, and it was known that power drills could not reach for us for some time, with visions of days of weary pulling at ratchet drills ahead of us, all methods of accomplishing the desired result were eagerly considered. Among others, it seemed possible that holes might be burned into

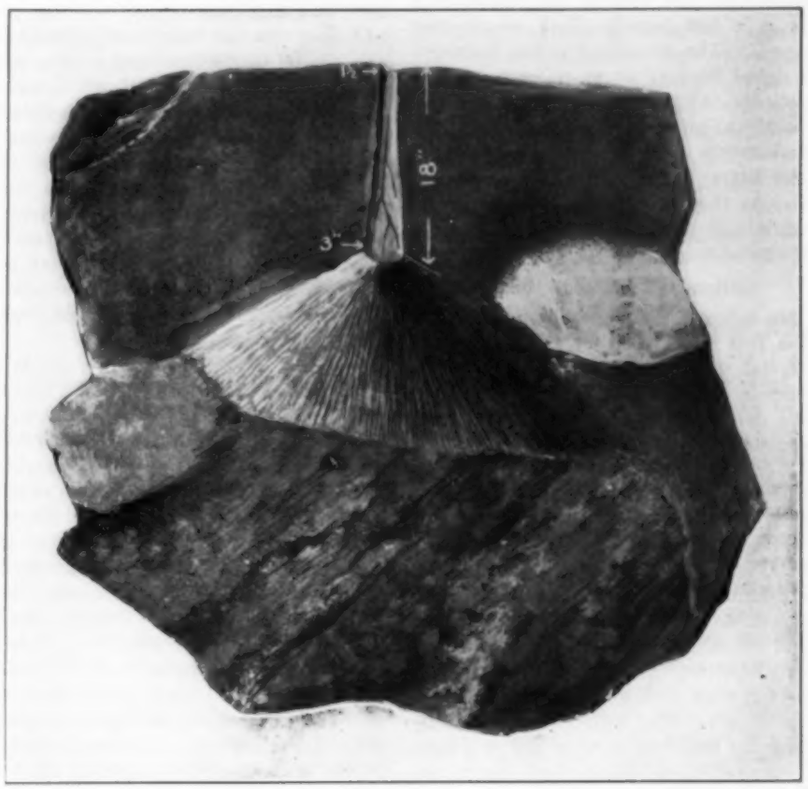
this huge mass, with a carbon burner. It was determined to try it. A piece of wrought iron, 2 inches in diameter, was bored out to be a tight fit on the carbon at one end, and on the iron rod, 1 inch in diameter at the other end. It was then split lengthwise, and clamps fitted over it. The carbon was put into one end, the iron rod about 2 feet long in the other, and the clamps drawn up. A piece of one-inch hose was slipped over the iron rod, and a cable soldered to the projecting end of the latter. One wire was grounded on the salamander, and a water rheostat was improvised from an oil barrel.

Having had a little experience with the effect of an electric arc, steel melters' glasses were obtained, at the same time that the carbon rods were, and with a man stationed at the rheostat, I put on the glasses, took hold of the rubber hose, which made an insulated handle for the carbon rod, sat down in one of the arches, and touching the end of the carbon for as brief a space as possible to the salamander, drew it away. After a few trials, an arc was formed, and presently, the metal began to flow and run away. The carbon could soon be advanced a little, and a good pocket was started in the side of the salamander. The rig was heavy and awkward to control, so that some change was necessary, and time was lost in that way, but, in about an hour of actual working time, we had burned a hole 14 inches deep into the side of the salamander, the hole being something like 3 inches in diameter, and, of course, very irregular in shape.

Considerable trouble was experienced in the power house, on account of the heavy and irregular load on the engine and generator, and after the first day, it was decided that it was a very risky business to continue the attempt to burn holes in the salamander, and that it was not wise to risk the destruction of a good electric plant to save $100.00 worth of hand drilling. Therefore, the attempt was abandoned, and the ratchets put to work once more. If the same amount of electric power, or preferably, double as much at 50 volts or less, instead of 200, making the amperage five or ten times as great, there is no doubt that holes could have been bored satisfactorily and rapidly in this way, always, however, with the limitation that the holes must be in the sides of the salamander, rather than in the top, and that they must have an outward slope, so that melted metal can run out.

Use of Dynamite.

The next day, after abandoning the use of the electric burner, we started in with the ratchet drills, as already described, and when they were down to the depths mentioned, we decided that we would take a chance and begin firing them. In work of this kind, where the hole is expensive and the cost of dynamite of relatively little importance, the first requisite is not to run any risk of destroying the hole. This is easily done, by putting in too much dynamite at first, filling the hole nearly to the top, and leaving only a small portion of tamping. The upper portion of the dynamite being relatively little resisted by the tamping the upper portion tends to burst the hole, and the lower portions of the charge augment the action, so that either the top hole may be shivered, or a flat cone of metal may be blown bodily from the bottom of the hole, destroying it altogether. If, on the other hand, small charges be employed with a large quantity of tamping, the element of time



EFFECT OF DYNAMITE.

comes in and the dynamite works on the metal at the bottom of the hole, before the tamping has time to yield, but the charge being so deep in the piece, no bursting takes place. The metal around the bottom of the hole, however, is compressed and driven outward, in all directions, not very much at the first shot, but, increasingly, as the shots are repeated.

This action has two effects, compressing the metal and forcing it outward from the hole, causing it to give way circumferentially, so that the hole not only becomes much larger, but deeper radially. Fissures form in the metal that is left, perhaps, an inch or two in depth. A line of these have a decidedly weakening effect on the piece which contains them, several times more than that of the holes alone. At the same time, the enlargement of the hole enables a much larger quantity of dynamite to be put in and still retain the quantity of tamping, with which the earlier holes were fired. Another point of vast importance, is the grade of dynamite used. Sixty per cent was the highest grade that we had on hand, and that was used throughout. The last point, of course, is obvious. That is, that all holes must be fired at once. On account of the entire mass upon which we were operating being iron and of the ease with which grounds could be formed, we were unable to get more than two or three holes to go at once with the ordinary type of battery. This caused tremendous loss of time and increase of danger. Accordingly, the lead wires were connected to an extension plug, which fitted an electric light socket. When all was ready, the socket was turned, and the result was immediate. There were no misfires nor failures to fire all the holes after that.

Firing the Shots.

With these preliminaries explained, it is hardly necessary to say that we did not try or want to break the whole mass at one shot. We put from one-half to a

stick of dynamite to each hole, and fired them as fast as we could, without any other delay, than that required to swab out the holes with a wet rag after each round. Much sooner than we expected, somewhere about the eighth round, we noticed the cracks running from some of the holes in the direction of the line of holes. These increased after each shot, and, at the same time, the pockets at the bottom of the holes were given an increased capacity for dynamite after each shot, so that we began to realize that it was safe to load them more heavily without danger of losing them. The charge was, accordingly, run up to two or three sticks per hole, and after about two rounds of this, the piece was split wide open from end to end and from top to bottom, right through the line of holes, as if it had been a block of chestnut wood. The remaining pieces, however, weighed 60 tons or more, each, and as they would require to be broken up sufficiently to go into the furnace sometime, and as the labor of removal would be less if they were broken up to moderate size as they lay, the drills were put to work, and the pieces were quartered in the same way that they had been halved.

Curious Effects of Dynamite.

In splitting the pieces, we noticed, for the first time, what became very plain several times afterwards, during the remainder of the operation. This was, that the dynamite not only forced the metal around the hole outward, so that the 1½-inch holes were increased, in some cases, to 5 and 6 inches in diameter by this action, as shown in Fig. 2, but also worked on the metal in the botom of the hole, which it compressed in a cone with a definite angle. The compression of the metal downward, and its compression and consequently splitting radially, had, as a resultant, the formation of an almost perfect cone, with an apex angle of about 120 degrees. The tendency had evidently been for this cone to blow out as a plug, but, the charge being well above the center, this was impossible, and the metal of the cone had simply been compressed upon itself. After the pieces were quartered, it was decided that they had best be brought down to the capacity of a 12-ton chain hoist. The drilling and shooting process was, therefore, continued, until the largest piece weighed, as near as we could estimate, not more than 15 tons, which overload, we were willing to risk on the blocks. A heavy billet of iron was placed across the space between the flanges of the two inner I-beams in the front arch, and a loop of chain suspended therefrom, to which the hoist blocks were attached. The pieces were then chained, lifted up with these blocks, and loaded on a car, which was run up to the arch on a 3-foot gauge railroad track.

In the matter of time, the salamander was quartered Friday night of the week, on which drilling was begun, and by the following Thursday, it was all broken up and cleaned out, practically, ready for the brick layers to begin laying the new hearth. Most of the ten days were spent in drilling. Had we had, at the beginning, a powerful steam rotary drill, the job would have been done in about five or six days, possibly a little less, but not much. The handling time probably could not have been improved without a powerful yard crane, which we did not possess. The handling of masses of this kind by any sort of hand apparatus, necessarily consumes more or less time.

But little injury was done to the furnace, by the blasting. The blast pipe is shown in Fig. 1, projects into the back arch, and each arch is provided with one of these. Two of them were injured; on one, the ell was broken, and another had a clean hole about the size of a man's hand punched into it. The bricks on the outside of the piers were slightly scarred in some places, and the noses of the bricks in the culvert, six or seven feet below, had been jumped off, as though they had been nipped in a vise, presumably, by the compressive action of the blast on the culvert, which threw its interior layer into compression, and caused this action.

FLUID PRESSURE OF STEEL CASTINGS.

At a recent meeting of the Sheffield Society of Engineers and Metallurgists, Mr. W. H. Ellis read a paper on turbine construction, direct driving by electric motor, and the hydraulic pressure of steel ingots in a fluid state. Dealing with the latter subject, Mr. Ellis said that for many years the Whitworth system of fluid pressure stood alone. Many hard blows had been aimed at it, but it had survived all attacks, and no steelmaker could conscientiously say that excellent ingots were not manufactured by this system. Owing, however, to the fact that the top one-third of any ingot made by this system was not altogether sound, inventors had been endeavoring to introduce a compression system which would render sound and homogeneous a greater percentage of the ingot. The trefilage system, invented by M. Harmet, was coming largely into use in England. For ingots of 25 tons it was a complete success, and there was reason to believe that with presses of sufficient power satisfactory ingots of much greater weight would, in the near future, be produced. This movement in the direction of fluid pressure for large ingots had greatly stimulated the manufacture of presses for the purpose.

A further process of fluid pressure, specially suitable for slab ingots and the like, had been patented by two members of the society, and he congratulated the society on the fact that its members were taking an active part in the introduction of special methods of this important nature.

The forging-press was still continuing its career of displacing all but the most moderate-sized steam-hammers, and he was glad to know that the system of steam intensfiers, originally introduced by a foreign firm, was now being manufactured by an engineering firm in Sheffield—a very conveninent and economical adaption to adopt, though he personally did not favor the use of the system of steam intensfiers for presses of 2,000 tons or over, owing to the large dimensions of steam-cylinder which became necessary.

For a large body of steelmakers the most pressing question of the present time was the improvement of the quality of steel for ordnance. As the Japanese war had shown, big guns were going to be used at much greater range than was previously anticipated, and greater demands would therefore be made on the guns used. The great cost of each big gun made the question of durability more and more important, and, although the quality of steel supplied for guns at present was very high, and the care exercised in the manufacture of this class of steel very great, still it was felt and hoped that some improvement might be forthcoming. Similarly, very exacting conditions were being made in connection with field artillery. Metallurgists were giving such attention to the subject as it might be hoped would give results creditable to them and advantageous to the country.

Mr. Ellis urged the importance of co-operation between engineers and metallurgists, in view of the great problems now facing them both.—*The Ironmonger.*

The United Engineering & Foundry Co., of Pittsburg, has received the contract for the construction of the new 28-inch three high mill and two hot saws for the Duquesne plant of the Carnegie Steel Co. The corporation will build the new 22-inch mill itself.

President F. A. Wilmot, of the American Tube & Stamping Co., Bridgeport, Conn., has wired as follows to the United Engineering & Foundry Co., which constructed the mill: "Started new semi-continuous mill. Rolled 12 inch, 11 gauge from 300 pound slabs. First band rolling with gauge, and surface exceeds quality of all old mill practice. Could roll same from 500-pound slab."

PROBABLE RESULTS OF A COAL MINERS' STRIKE.

VARIED EXPRESSIONS OF MANUFACTURERS.

General Opinion that Conflict Will be Averted, but Some Think that Fight Will Come.

Iron, steel and manufacturing interests generally are now of the opinion that the threatening strike in the coal industry will be avoided. Below are presented a number of replies to inquiries sent out by THE IRON TRADE REVIEW, asking the views of the executive heads of various large concerns all over the country on the probable outcome of the present difficulty. They are almost overwhelmingly of the opinion that no strike of consequence will develop. The replies indicate, however, that precautions have been widely taken in the way of storing coal and that, should a strike be declared, its effect would not be strongly felt in the iron and steel field for several weeks or months.

A Cincinnati Manager.—The manager of one of the largest coal companies in Cincinnati says: We are looking for a strike and have made all preparations possible. We have all the coal in barges and in our yards that we can take care of and believe that it would take about ninety days for the surplus we have on hand to be absorbed. The price would be advanced at once without a doubt. The manufacturers would, we think, pay the advance and keep running as long as they can get the coal. As to how long it would be before there would be actual scarcity, that is hard to tell. We think, however, that those points that are located where non-union coal mines can be reached, that is West Virginia mines and where Ohio River coal is available, will not be embrrassed for a long time.

A Cincinnati Pig Iron Merchant.—I do not believe that there will be any strike and think it idle to speculate on the results of such a strike at this time. So far as the pig iron business is concerned I should think that, if the strike were to take place, the consumer and the furnace interests would be affected to about the same extent; that is, that production would be hampered for lack of coke to about the same proportion that the consumers of pig iron would be obliged to curtail operations. I do not think that the Connellsville region would stop making coke and sell the coal to any very great degree, as the Connellsville coke operations are not equipped to ship coal and are not prepared to get the coal into cars. The coke prices would naturally advance with the coal shortage and there would be just as much inducement to make coke as to sell the coal.

A Leading Pig Iron Merchant in Cincinnati:—I do not look for any coal strike. The disturbance to general business that would result from such a contest would be so quickly reflected in the stock markets that the large interests in the east would not allow such a set back to business to take place at this time. So many and varied conditions might arise if the strike should by any chance take place that it is idle to speculate on what would occur under such conditions. I am told that the coal interests have so much coal mined ahead that they would almost welcome such a strike to relieve the markets of the great surplus of coal in hand. Unless the strike should be a protracted one, therefore, there should not be expected to be any important disturbance to the pig iron business or to business in this territory.

Mesta Machine Co., Pittsburg.—We think that the threatened strike will be averted, although admitting that the attitude of the operators and miners would seem to be unfavorable to this conclusion, but there is a growing and most marked tendency to settle questions of this kind, as well as questions of even greater moment, by that most sensible and rational means: that of arbitration. In view of the faith that consumers have in an equitable arbitration of the difference existing between the operators and miners, but few consumers have provided any appreciable amount of extra stock of fuel in advance. In the event of a strike occuring, it would certainly be unfortunate to the consumers, on account of their not being covered with an extra supply of fuel, and that it would require but a brief time to consume all of the fuel on hand. This fact, however, would be a potent factor in effecting an early adjustment of the differences. In the event of an adjustment being effected, it is highly probable that the basis would be very favorable to the miners, and almost equally as favorable to the operators, and correspondingly unfavorable to the consumers, as cost of production would certainly be increased. In the event of a satisfactory adjustment of the dispute being arrived at prior to April 1, the effect on the general business situation would be favorable, but on account of the supreme faith that the strike will be averted. business conditions have not, so far, been very seriously affected and while a sense of relief will be felt by the consumers, we think that it would not be probable that the announcement that a settlement had been reached, would be the cause of any great increase in the volume of general business.

Russel Wheel & Fdy. Co., Detroit.—There is no question in our mind that a general long continued suspension of operations in the mining of coal would prove disastrous to the general business interests of the country. We cannot but think the conservative judgment of those empowered to speak respectively for the operators and operatives, having in view the vast loss involved not only to the interest they represent but the general public, will bring them to a reconciliation of their differences. Individually we are doing all the business we can get and getting all the business we can do, in the belief that an adjustment of the reported difference between mine owners and mine operatives will be found.

Troy Malleable Iron Co., Troy, N. Y.—"If all concerns would carry from three to six months' supply of coal in stock, coal strikes would not be very successful."

Western Foundry Supply Co., East St. Louis, Ill.—"We do not think it probable that the coal miners will strike in this district. From what the writer has been able to learn from observation on two or three trips to the east, large consumers of fuel coal have stocked up fairly well. I am not well enough posted to venture an opinion as to the outcome in case of a strike, and we think if a satisfactory adjustment of the dispute could be arrived at prior to April 1, the effect would be of great benefit to the general business situation."

The P. Hayden Saddlery Hardware Co., Columbus, O.—"We have felt all the time as though there would be no strike, although we have been making some preparations for one so as to be prepared for an emergency. We rather think that the operators would like to have a strike. Prices have been so low all winter owing to the open weather that we think the mine owners feel that a strike at this time of a month or two would tend to bolster up prices. We do not believe that many people have prepared for a strike by laying in surplus fuel with the exception of some of the railroads. It is our opinion that if a strike were to take place and the

president were to keep his hands off the miners would be beaten to a finish. We do not believe there is any call for any advance in the mining rate, which is now higher than was ever known, and the history of all strikes within the last year convinces us that if the operators were left to fight this thing out by themselves that they would ultimately win out. Owing to the activity in all lines of manufacture in this country at this time we think a cessation of mining now would be extremely disastrous, and we do not think a strike would be tolerated by the manufacturing interests, as they could not afford to be shut down for any length of time, and we think pressure enough could be brought by the various manufacturing intersts to compel both parties to make concessions so as to continue operations."

Cincinnati Shaper Co., Cincinnati.—"We have felt that there would be no strike, thinking that the better judgment of the operators and miners would obviate one; and consistent with these views, we have not stocked up fuel in advance. Should there be a strike, the possibilities are that we would be inconvenienced, although we believe that the party from whom we have been buying would do everything in his power to protect us. Business with us has been, and continues, in a very satisfactory condition, and we have more orders than we are able to take care of. We look for the present situation to continue after April 1."

Acme Steel & Malleable Iron Works, Buffalo.— We do not believe there will be a coal strike this year. We are under the impression that the majority of manufacturers have a fair stock of coal on hand. At the present time we have, and intend to keep, about four or five months' coal supply on hand, and will therefore be amply protected against a shut down in the mines. A general coal strike in the coal mines at this time would be a great calamity, and do as much damage to business as a serious financial panic. It is our belief that it would take several months before business would be moving again as it is at present. In our observation, we have found that it takes a long time for business to revive after it has once had a serious setback. We believe that the present year will be the most prosperous in the history of this country if there are no serious labor troubles.

Buckeye Engine Co., Salem, O.—We are not in position to form any opinion as to the probabilities of a coal strike. The fact is the operators themselves in this section do not seem to be a unit in their judgment as to the probability of there being a coal strike. Some of them we have talked to are very pessimistic while others are just the opposite and they feel that the differences will be patched up. We know of no consumers in this section who have provided a stock of fuel on which to fall back in case of emergency. A few perhaps have laid away enough to run them four or five weeks but such parties are very scarce. The difficulty of housing a large quantity of bituminous coal is the probable reason for so little stock being provided ahead. Should there be a strike we believe it will be a very unpopular one with everyone except perhaps a minority of the miners. We do not believe that the miners in this section are really in favor of a strike. While many of them might not be willing to so express themselves, yet we feel if they were not subjected to abuse from their leaders, they would willingly oppose a strike. Owing to the concessions which the operators have made in recent years, it has increased the cost of fuel in this section about 30 per cent and any further increase will certainly work hardship on both the large and small consumer alike. In the event of a satifactory adjustment of the dispute we believe that it will clear the atmosphere of a great deal of uncertainty and will greatly improve the business situation and place everything on a much more substantial foundation, especially if the agreement extends over two or three years.

A Large Steel Works of Northern Ohio.—Certainly great interest is taken in the threatened coal strike, by the iron and steel manufacturers. We do not believe there will be a strike, as the magnitude of the interests involved will compel an agreement or arbitration. We believe that practically all consumers have prepared themselves with stocks of fuel for at least two months. In the event of a strike we believe the miners will lose. In the event of a satisfactory settlement of the dispute before April 1, we believe it will have a very good effect on the general business situation. If it is not settled, it may be the beginning of the end of our present remarkable prosperity.

A Heavy Consumer of Steel in Michigan.—In our judgment there will be no general strike among the coal miners. From our observation we find that manufacturers generally are guarding against the possibility of a strike and have loaded themselves up with all the coal they can store. You can readily see from this that the much talked of strike has been of great benefit in relieving the coal mines of a large surplus of stock which they had on hand, and has been the means of converting the same into cash at some little advance over the regular market prices. We believe in the end that there will be a satisfactory adjustment of the wage scale demanded.

Buhl Malleable Co., Detroit.—I do not think the possibilities of a strike of the coal miners is very great, owing to the fact that John Mitchell has called another convention of the coal miners and operators through the efforts of President Roosevelt, and I am under the impression that the president will find some way of adjusting this matter to the satisfaction of both sides. Besides, I do not think that the coal miners are in a position financially to enter into a prolonged struggle,—as it would necessarily be,—as the consumers all over the country have been preparing themselves by providing a stock of fuel; at least that seems to be the impression, and storing it in their yards for future use. If, however, there is a strike, I think it will be settled by arbitration, as the operators are willing to concede some things, but will not sign a higher scale of wages. I also think that after the miners are out for a while, they would not have much trouble in inducing them to return. If this matter is settled satisfactorily at the next convention prior to April 1, I think it will have a tendency to loosen up the market and soften prices.

Chicago Malleable Castings Co., West Pullman, Chicago.—I feel, should the strike occur, that it may cause a temporary dropping in prices, but I consider the situation so strong that the recovery would be rapid. The whole situation, to my mind, does not materially depend on the threatened strike, but is a condition based entirely on the question of demand and supply. So many idle furnaces have been put in operation; new ones building and contemplated, that, unless the consumption keeps an equal pace, many of the furnaces, rather than blow out, would be willing to make a reduction over the present values. I consider the present period between seasons, with a few exceptions, and I do not look for a strong buying movement until possibly May 1. I do not know of any manufacturers who are holding back with their purchases if they have sold the finished product, and believe we will see a steady year's output, with but a slight fluctuation in prices

United Engineering & Foundry Co., Pittsburg.—It looks as if the bituminous operators and miners may get together and that no strike may take place on April 1. For this we sincerely hope. We believe, however, that consumers, including railroads and manufacturers, have laid in a large supply of coal, partly resulting from the fear of a strike, and partly because of the open winter, requiring less coal consumption

and better deliveries., We believe that, if there is no strike, the general prosperity in manufacturing and railroad interests will continue. We also believe that there is no satisfactory reason why the miners should have advance in pay. I believe miners could readily make good living wages on the present scale if they had steady occupation, and this could be supplied if the car service of the railroads was adequate.

The S. Obermayer Co., Cincinnati.—In our opinion a strike of the coal miners would be a very serious thing just at this time, especially with the iron industry in its present flourishing condition. However, we judge from the daily papers this morning, that by the interception of our worthy president, a general strike, in all probability, will be averted, and in our opinion hardly think the threatened strike will materialize.

The Uehling-Decker Co., Passaic, N. J.—From the latest published reports in the daily papers, we are led to believe that the threatened coal strike will be averted, and this will no doubt be quite agreeable to manufacturers generally throughout the country.

The J. D. Smith Fdy. Supply Co., Cleveland.—We understand that most everyone has stored all the coal that he can possibly handle, so that in case the strike is of short duration not much damage will be done.

The Superior Charcoal Co., Grand Rapids, Mich.—We hardly believe that the feeling of hesitancy in buying is due to the fear of results by the threatened strike on the part of the coal miners. So far as our observations go the feeling of hesitancy is caused by nearly all of the large consumers of metal being covered by contracts for material for some months to come, so that there is a general disposition to await developments, and under which, a general advance in prices may establish itself. Wherever the possibility of a long continued strike is taken seriously into account, the larger establishments have protected themselves by stocking up with coal to insure continuous operation for many months; hence, it is our belief that, while a long continued strike might seriously affect the operation of coke furnaces and their output of pig iron, it would hardly be a sufficient factor to the manufacturer to bring about a hesitancy in covering for their requirements.

The C. O. Bartlett & Snow Co., Cleveland.—We do not believe that there will be a coal strike. We have too much respect and faith in the judgment of the leaders of the miners to think that they would force the men to go on a strike under the present conditions. If the leaders should advise it, we feel very confident that a very large number of the miners themselves, would be very reluctant to do so and that many of them would absolutely rebel, so that many of the mines would operate. According to our judgment many large manufacturers have a very large stock of coal on hand, in fact they have been keeping a supply in store for a few years. They know from past experience that it is policy for them to keep several months' supply of coal on hand, on account of the danger of strikes, not only coal strikes, but railroad strikes, and that the smaller manufacturers fearing a strike have stored all the coal they could possibly find room for. We think that there is no question whatever about it. If there should be a strike our judgment is that the West Virginia mines together with some in Ohio would keep the factories well supplied with what they need at slightly advanced prices. If there should be a strike it would affect business to a certain extent. It would tend to make the prices of coal considerably higher to the great advantage of the mine owners, who would get a chance to work off their surplus at a fair price. It would also help to a tremendous extent, producers of coal from other countries shipping it to this country. West Virginia mines would be benefited very much by a strike as they can now deliver coal very cheaply to Boston, New York and most all places on the Atlantic coast, in fact they have been spending millions of dollars in preparing to deliver coal cheaply f. o. b. ocean boats and if the miners want to do anything to help West Virginia, Tennessee and other southern states, also Colorado, then let them bring on a good big strike, but as stated to begin with, we do not think that any set of competent men would be foolish enough to advise such a course, which could not well help being only a suicidal act for themselves.

R. D. Wood & Co., Philadelphia.—The probabilities are against a coal strike; if it occurs it will be on account of etiquette and of short duration. The "Anthracite Arbitration" determined that the closed shop was incorrect in principle; in other words that every man had a right to seek work and no one had a right to prevent him. It also determined that any dispute about wages and hours (which are interchangeable factors) should be left to arbitration. Hence no strike can be of long duration. Consumers have undoubtedly so largely provided themselves with supplies as to have an appreciable effect upon the demand for fuel during the next three months, which may have considerable effect upon the course of prices. I do not consider that the avoidance of a coal strike will cause business to increase materially in volume, while the removal of the uncertainty may cause prices of both fuel and the grosser iron products to decline in value.

McLanahan-Stone Machine Co., Hollidaysburg, Pa.—We do not believe there will be a strike. As to preparing for such a contingency, very few can store more than enough to last them more than a month or two. In case any increase is given the miners, consumers will pay the difference. We are of the opinion that business will continue good.

Green Engineering Co., Chicago.—As far as we are concerned, we have not as yet noted any difference in the way of hesitancy in buying and the writer's personal opinion is that this coal strike will not take place.

Walter A. Wood Mowing & Reaping Machine Co., Hoosick Falls, N. Y.—Recent advices state that there will not be any strike of the bituminous coal miners. We are highly pleased with the action taken by President Roosevelt and President Corey of the United States Steel Corporation.

A Large Philadelphia Manufacturing Concern.—Not being in close touch with the situation other than through newspaper reports—which one day indicate a strike and the next day indicate peace—it is very difficult to predict which it will be, but were we obliged to say one way or the other, in the writer's opinion there will be no strike, or if one does occur it will be of but short duration. Judging from observations, and conversations with manufacturers and steam users generally in this section, consumers are very generally laying in stocks of coal and coke sufficient to carry them for a number of months. Should a strike occur, judging from the experience of the past, we believe that the operators would hold out longer and more firmly than they did in the last strike, and would eventually win. In the event of a satisfactory adjustment of the dispute prior to April 1, we doubt whether there will be much change in the general business situation, excepting that the coal mining companies and closely allied interests will doubtless go ahead and buy more heavily for improving and enlarging their plants than they have been doing for some months past. We believe that they have greatly restricted the purchasing of new equipment, etc., in view of the possible strike, and owing to the tremendous stock of coal stored by the companies there will doubtless be a period following April 1 in which mining will be greatly restricted in order to market

some of the coal now stored, and they will likely take advantage of the temporary shut down of their mines to install new equipment.

A Cincinnati Foundry Supply Company.—We believe that the coal miners will strike. We also believe that a great many consumers, particularly the various railroad companies throughout the country, have prepared themselves as much as they possibly could by loading in stocks of fuel. As to the outcome of the strike, so far as relates to concessions gained or given by either side, we do not even care to surmise. We believe that, if a satisfactory adjustment of the dispute is arrived at prior to April 1, and the likelihood of the strike averted, the general business situation will improve. The strike agitation has to an extent affected certain lines of trade by adding uncertainties.

Ross-Meehan Fdy. Co., Chattanooga, Tenn.—Very little uneasiness is felt in this section by reason of the threatened strike among the coal miners. A few of the coke makers show a tendency to not contract heavy tonnage ahead,—but the buyers, as a rule, feel no alarm on this account, as coke and coal are easy and there is no trouble in securing a plentiful supply. The general sentiment is, that cooler judgment will prevail among the miners and that the operators will have no difficulty in securing a sufficiency of labor.

Robert Field Sales Agency, Cincinnati.—We are of the opinion there will be no strike among the soft coal miners during the coming season, or at least no strike of sufficient proportions to seriously inconvenience or tie up the business interests of the west. From all we can learn, the Pittsburg district, West Virginia and Virginia fields will not be affected, and while the Ohio, Indiana and Illinois districts may be tied up, sufficient coal will be available from the unaffected districts to take care of all requirements. It is unquestionably a fact that all large consumers of coal, including the railroads, are stocking very large quantities in anticipation of a possible strike, and the country at large will be in position to face a strike of three or four months' duration without serious inconvenience although the small consumer will probably be called upon to pay premium prices. We have a good deal of faith in the common sense training of the operators and also of the officers of the miners' unions, and feel it will be seen that neither side can consistently afford to face a strike under the conditions existing today, although if such a strike is forced upon the country, the miners' unions will unquestionably be the greatest sufferers.

The Transue & Williams Co., Alliance, O.—A general strike in the bituminous coal fields at this time would be very disastrous to the manufacturing interests of this country, for the reason that business was never better than it is now, and the prospects for continued good business for some months to come. Such a strike would change this condition and might end the year very disastrously. We are very hopeful that the later newspaper reports indicating that the differences will be settled by reinstating the scale prevailing in 1903 and 1904, are true. If this can be done, we believe it would be best for all concerned. We, like a great many others, are arranging to lay in a large coal supply to keep us going for at least several months should a strike be declared, but at the best there will be very few manufacturers that are situated so that they can lay in very much of a supply, and it would only be a short time until the large majority of the factories would have to be closed for want of fuel. We firmly believe that if this strike is settled, or rather prevented, we can all expect a very busy year in manufacturing lines, especially in iron and steel products, and that usually means a prosperous year for most all lines of industries.

Curtis & Co. Mfg. Co., St. Louis.—Regarding the coal strike; the newspaper statements are so conflicting that we are in doubt as to whether or not there will be a strike; we note that a great many consumers, where possible, are storing coal. We, for instance, are storing three months' supply. If the strike is started, we believe the logical result would be a small concession to the miners in wages only; we would rather see a strike than to have the coal companies as a unit recognize the unions, and accept union dictation. A coal strike would certainly be of great harm and damage to general business, and as soon as it is definitely known that there is no strike, we believe there will be a general improvement, especially in the stock market.

The Globe Rolling Mill Co., Cincinnati.—Recent developments in the matter lead us to believe that an early adjustment will take place, as the time between now and the date set for a final decision is long enough for public opinion to assert itself, and to be the means of influencing both sides. We are not in position to state positively, but we would not believe large consumers to be improvident in the matter of fuel supply in anticipation of any trouble. The effect of a strike at this time would be far reaching, and would no doubt tend to demoralize the prosperous condition of business which we are now enjoying. In the event of a satisfactory adjustment of the dispute being arrived at, we feel quite confident that conditions would not only remain as they are, but would even improve to a great extent, as we are looking forward to this year to be one of the best in our line of business. It is our most earnest wish that an amicable agreement will be reached at an early date for the welfare of the community at large.

Williams, White & Co., Moline, Ill.—We think there is danger of a strike, though apparently less than at first.

Graham Nut Co., Pittsburg.—Developments in the past few days, to our minds, have relieved the situation greatly and it appears now that the possibilities are that a strike will not take place. We know that quite a number of consumers have prepared themselves by providing sufficient stock of coal to run them from 30 days to three months, but we feel that the great majority have made no preparation whatever and consider that should a coal strike take place it would have a very serious effect upon the present healthy condition of business. In the event of a satisfactory adjustment prior to April 1 we feel that the effect on the general business situation would be to start another large buying movement in the iron and steel industries, which would assure a large volume of business for at least the remainder of this year. We feel that the general public are particularly desirous that a strike should not take place at the present time and we sincerely hope that the differences will be adjusted amicably.

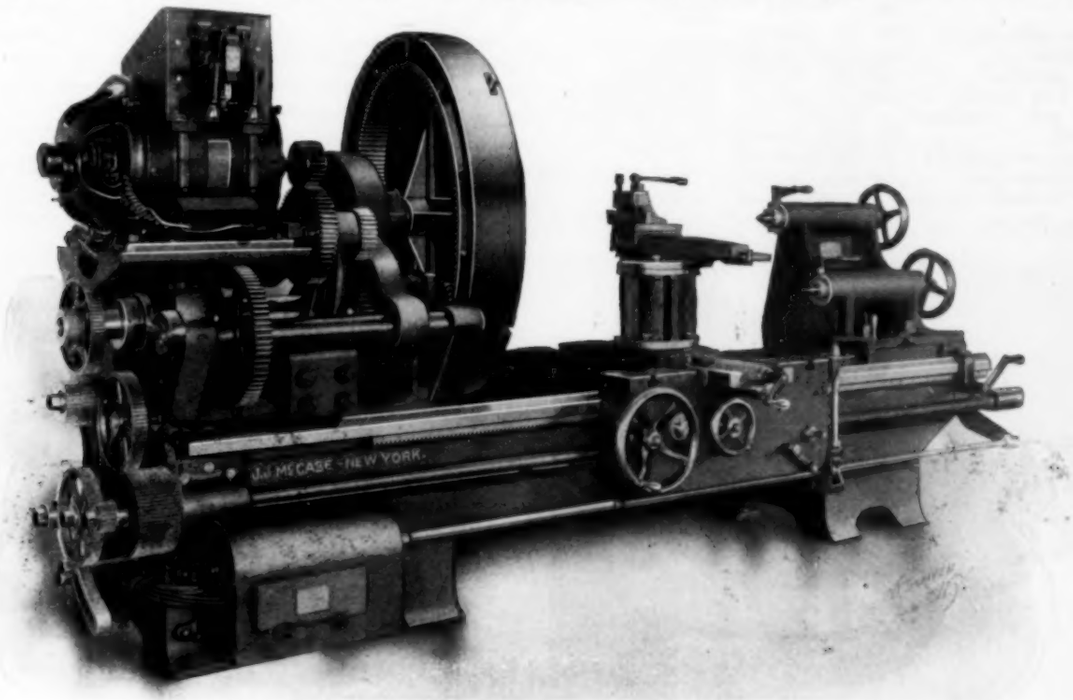
Wheeling Mold & Fdy. Co.—The writer knows that there are great piles of anthracite coal in the east and great piles of coke all through this section; does not know whether the anthracite belongs to the consumers or the operators. From observations of this kind, we believe there is a good supply of coal on top of the ground. We think there is not going to be a strike; if there is, it will only last until people begin to need fuel badly, for the manufacturing interests are not going to be tied up for lack of fuel when they have orders ahead to fill. In regard to the effect on business in case of an adjustment April 1, we think it will not be felt, as most people are not counting on a strike.

President of One of the Country's Leading Iron and Steel Producing Companies.—We do not believe that the conditions are favorable to a strike. If a strike should occur, it will, of course, be disastrous to both interests. If the operators stand as a unit, the union will be defeated. Briefly, I think the interests of the operators are such at the moment that they are not prepared to go into a strike, and that a compromise settlement will be reached.

McCABE DOUBLE SPINDLE LATHE.

The accompanying illustration shows a motor driven "new style" 26 and 48 inch McCabe double spindle lathe, with a 12-foot bed, which was lately built for the United States Government shops at the Denver, Colo., mint. This type of machine has been used largely in the prominent iron and steel works of the country, for use in repair work.

The construction is extremely powerful, the gear ratio of the 48-inch swing being 72 to 1, when using the geared plate. Extreme rigidity and stiffness was embodied in the lathe originally to meet the demands made upon it by railroad shops, where the turning of locomotive drive wheels requires machines of massive proportions.



MC CABE MOTOR-DRIVEN, HEAVY PATTERN, DOUBLE SPINDLE LATHE.

The machine is driven by a 7 horsepower variable speed motor, which operates on direct current. The speed variation ranges through 20 steps from 350 revolutions to 1,750. The motor is mounted on a table above, and is secured to the headstock. The table itself is supported by brackets. The motor shaft is geared directly to the lower spindle of the lathe. The controller is of the full reverse drum type, self-contained, and is placed on the floor in front of the headstock. The spindle of the controller is geared to a spline shaft, which runs along the bed, and is operated by a crank, with index pointer and dial, which is secured to the lathe carriage. The operator can thus start, stop, reverse or vary the speed without leaving his position.

The Lackawanna Steel Co., has installed two of these double spindle lathes fitted up with 7½ horsepower alternating current motors. These lathes have also been fitted up for all other different styles of motor drive. They are built by J. J. McCabe, 14 Dey street, New York.

HARDNESS OF A CHILLED SURFACE.

About once in so often this question comes up. Not long ago two different makers of corn grinding mills reported that white iron run against a chill was so soft that it could be dented with a hammer. The trouble was that they used a non-chilling white iron and the remedy was to abandon this and use scrap plow points or scrap car wheels. Now comes a question as to the actual hardness of the portion of a gray non-chilling iron that was run against a chill. Several samples were tested on Keep's hardness testing machine.

The fracture of the one-inch square test bars with one side cast against a chill showed a white surface from 1-32 to ⅛ inch thick. Immediately under this was a very dull dark portion, with very close grain, about ¼ inch thick.

Then the grain changed suddenly to an open bright gray grain, which was uniform throughout the rest of the test bar.

The test showed the bright gray portion to be of a uniform hardness. As soon as the drill came to the black portion the diagram bent suddenly and was a perfectly straight line clear through the white skin.

Whether the drill started through the white skin or from the unchilled side the white part was not any harder than the soft dull black portion under it.

If a hard skin was required a portion of the mixture should be chilling iron such as car wheel scrap.

W. J. Keep discovered that chilling the surface of a non-chilling cast iron turned the iron under the chill a dead black. A few years later an English chemist Mr. Hogg, found that there was more graphite and actually more carbon in this black chilled portion than in the part that cooled naturally.

The test for hardness could not be made until the above machine was put on the market and no one supposed that the white chilled skin was as soft as the black portion.

The next determination will be the exact chemical composition of the white soft skin. And then whether the skin adds strength as with malleable iron.

The four-story office building of the Bethlehem Steel Corporation at South Bethlehem, Pa. and a portion of machine shop No. 2 were destroyed by fire on the night of Feb. 25. Many valuable drawings and plans were destroyed and the loss will probably reach $50,000.

STEADY INCREASE

In Production of Basic Open-Hearth Steel in the United Kingdom.

The record of the open-hearth steel industry of the United Kingdom for 1905, which has been compiled by the British Iron Trade Association and published through the *Iron and Coal Trades Review*, shows an increased output of ingots and of every branch of finished materials as well, which stamps the past year as the most successful in the industrial history of the country. In the following table comparative figures of the production in tons in various lines for the past two years are presented:

	1905	1904.
Open-hearth ingots.	3,897,748	3,245,346
Acid Steel	3,042,834	2,583,282
Basic steel	795,238	662,064
Plates and angles ..	1,765,111	1,456,146
Steel and tinplate bars	839,415	662,024
Blooms and billets	402,535	304,198
Open-hearth rails ..	108,593	77,160

The returns collected in the spring of 1905 showed that there were then 510 open-hearth furnaces erected in Great Britain, of which 345 had been in operation during the year 1904. During 1905 the average number of furnaces in operation was 383, while the total number of furnaces built remains substantially the same as in the previous year. The average output of ingots per furnace in operation was 9,400 tons in 1904 and 10,130 tons in 1905. Of the total furnace equipment of the country, 376 are built for the acid process and 138 for the basic, making a total of 514. Twenty-one new furnaces were being constructed in 1905, and 131 furnaces were either unemployed or very occasionally employed in that year.

Of the outputs of open-hearth steel ingots in 1905 by individual works, only one exceeded 300,000 tons; two of them were between 200,000 and 300,000 tons; and nine were between 100,000 and 200,000 tons; while thirteen others produced between 50,000 and 100,000 tons. The remainder severally turned out less than 50,000 tons.

One of the features of the trade of 1905 was the virtual monopoly by Wales of the production of tinplate bars. Of this product, the tonnage produced in North and South Wales in 1905, at twelve different works, was a record figure. In no other district was any quantity of tinplate bars produced worth speaking of. The production of steel bars other than tinplate was 228,144 tons, the largest output of which was in Scotland. But it will be clear, fom an examination of the figures, that in Scotland generally the demand for plates and angles, and the provision made for supplying that demand, were the predominant features of the trade—so much so that about 70 per cent of the total make of ingots, including loss in conversion, was absorbed in the manufacture of these products.

Scotland led in the production of ingots, with 1,266,586 tons, the north-east coast produced 1,086,414, North and South Wales 779,044, Staffordshire, etc., 284,331, Sheffield and Leeds 281,716, and Lancashire and Cumberland 181,657.

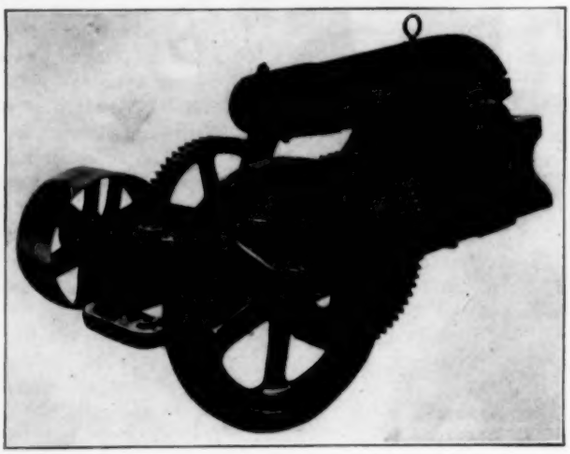
This record, comments the *Iron and Coal Trades Review*, "shows that the production of basic open-hearth steel is steadily increasing, although it is as yet considerably less than one-fourth of the total make of steel by the open-hearth process. The progress in this direction has for some years past been much more considerable in both the United States and in Germany than in our own country. The confidence that is felt in the future of the open-hearth process is attested equally by the rapidity of its development in the past and by the plans in hand for the future."

A DOUBLE GEARED CROCODILE SHEAR.

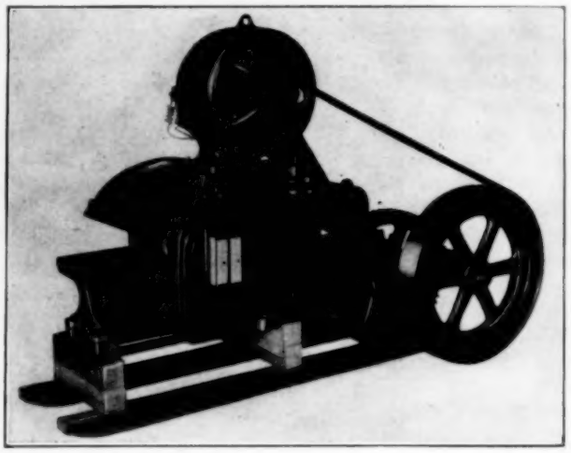
In the accompanying illustrations are shown two styles of crocodile shear built by the Canton Foundry & Machine Co., Canton, O. These tools are both of the double geared type, that is, the driving shaft is provided with two gears, one on each side of the machine, which mesh with pinions on the counter-shaft. This prevents undue torsion on the shaft, and reduces the wear on the gears.

Another feature of this machine is that the blade is operated by means of a crank and pitman, instead of by an eccentric, as is the usual fashion. The knives made are extremely heavy, and are made of carefully tempered crucible steel. They are well supported and closely fitted, and have four reversible cutting edges.

The No. 5 style which is most commonly used, has knives 24 inches long, and weighs 20,000 pounds. Its capacity is 2½ inches square or round iron. The machine is built in seven sizes, varying in weight from 4,000 to 50,000 pounds, and in capacity from 1¼ to 4½ inches, round or square iron.



BELT-DRIVEN CROCODILE SHEAR.



MOTOR-DRIVEN CROCODILE SHEAR.

The maker recommends that the motive power be separate from the machine, as the constant jar that always accompanies this type of tool is injurious to a motor or any other motive power appliance, making the expense for repairs heavy. Many persons, however, desire to have the motor attached and when this is done, it is placed, as shown in Fig. 2, on the shear bed, and belted to the fly-wheel. This gives very good results, the belt acting somewhat as a cushion between the motor and the shaft.

The amount of coke yielded by a given weight of coal varies with the kind of coal, ranging from 0.9 to 0.35.

Industrial Stocks Share in Decline.

The stock market of the past week was one of liquidation, with random, disorganized trading, sharp reverses and general declines in which iron, steel and manufacturing securities shared to a considerable extent. The week developed a strong array of railway and manufacturing earnings, bank statements and other data which contained no element of weakness but rather were positively indicative of continued prosperity on an unprecedented scale. The threatened coal strike which had exerted a deterrent force on the exchanges for several weeks, lost most of its menacing aspect through the launching of negotiations calculated to avoid an open break. The announcement of the terms practically agreed upon for the lease of the great Hill ore lands put an end to the numerous reports of a hitch in these proceedings and made almost a certainty of a deal of immense proportions. In these regards market conditions were favorable, but they were completely overbalanced by the absence from the exchanges of any but the professional traders and by the increased stringency in money rates both for call and time loans. Reports compiled by the comptroller of the currency showed national bank loans over the country the heaviest on record. Considerable money was shipped to inland points, the subtreasury continued to withdraw money from the banks and incorporations of new enterprises with their capitalization figured by millions continued. The money situation, in the face of these conditions, dominated the market and exerted a depressing influence all through the week until the announcement came Saturday that Secretary Shaw would deposit $10,000,000 in the banks of the country. Prices sagged to the lowest level of the year. In the decline American Locomotive, American Steel Foundries, Colorado Fuel & Iron, General Electric, Republic Iron & Steel and the steel issues were prominent. The copper stocks and western railway issues were the market leaders and generally closed with a decided loss.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quotation Feb. 24	Closing Quo. March 3	Changes	Date of 1906 Ann. Meet.	Par Value	Capital Outstanding	Dividend Basis	Dividend Being Paid	Dividend Date Last Div. Dec.
Allis-Chalmers Co	21⅞	20⅜	−1½	Sept.	100	19,820,000	7 cum	.....	....
Allis-Chalmers preferred	59¾	56	−3¾		100	16,150,000	.....	.....	Feb., 1904
American Can	9⅞	9½	− ⅜	Apr. 24	100	41,233,300	7 cum	.....	....
American Can preferred	68	67¾	− ¼		100	41,233,300		5 Q.	Jan., 1906
American Car and Foundry	43½	40⅜	−2⅛	June 28	100	30,000,000	7 n. c.	.....	May, 1905
American Car and Foundry preferred	101½	101½	.....		100	30,000,000		7 Q.	Jan., 1906
American Locomotive	73	68⅝	−4⅜	Oct. 16	100	25,000,000	7 cum	.....	.....
American Locomotive preferred	116¾	116	− ¾		100	24,100,000	4	7 Q.	Jan., 1906
American Shipbuilding	55	55	.....	Oct. 2	100	7,000,000	7 n. c.	4 Q.	Dec., 1905
American Shipbuilding preferred	107	108	+1		100	7,900,000		7 Q.	Jan., 1906
American Steel Foundries	12	11⅜	− ⅝	Oct. 3	100	17,700,000	6 cum	.....	.....
American Steel Foundries preferred	47¾	43	−4¾		100	17,700,000	.....	.....	Aug., 1905
Barney & Smith	25	25	.....	June 5	100	1,000,000	8 cum	.....	June, 1894
Barney & Smith preferred	125	120	−5		100	2,500,000		8 Q.	Mch., 1906
Bethlehem Steel	31	30	−1	April 3	100	15,000,000	7 n. c.	.....	.....
Bethlehem Steel preferred	91	89	−2		100	15,000,000	6	7 Q.	Feb., 1906
Bullock Electric preferred	114	114	.....	Oct. 2	100	1,000,000	6	6 Q.	Jan., 1906
Cambria Steel	35¾	35⅜	− ⅜	March 20	50	45,000,000	4	3 S. A.	Feb., 1906
Cambria Iron	48½	50¼	+1¾		50	8,468,000	7	4 S. A.	Jan., 1906
Colorado Fuel & Iron	63⅞	61½	−2⅜	Oct. 15	100	30,132,000	5	.....	Apr., 1902
Wm. Cramp & Sons Ship & Eng. Bldg. Co.	24	20	−4	May 31	100	6,098,000		.....	Nov., 1902
Crucible Steel	15⅜	14¾	− ⅝	Oct. 17	100	25,000,000	7 cum	.....	.....
Crucible Steel preferred	78	77½	− ½		100	25,000,000	.....	.....	Sept. 1903
Empire Steel	7¾	7¾	.....	Feb. 28	100	2,281,400	6 cum	.....	.....
Empire Steel preferred	37	37	.....		100	2,500,000	5	3 S. A.	Jan., 1905
Fay & Egan	95	95	.....	Feb. 20	100	1,000,000	7 cum	5 Q.	Nov., 1905
Fay & Egan preferred	120	120	.....		100	1,000,000	8	7 Q.	Nov., 1905
General Electric	170½	167¼	−2¼	May 8	100	48,256,050		8 Q.	Jan., 1906
International Pump	33	30	−3	June 5	100	12,262,500	6 cum	2	July, 1905
International Pump preferred	82	84¾	+2¾		100	8,850,000		6 Q.	Feb., 1906
Lackawanna Steel	75	75	.....	March 14	100	34,971,400		.....	
Lake Superior Corporation	20	20	.....	Oct. 3	100	40,000,000	6	.....	
Niles-Bement-Pond	119	119	.....	Feb. 7	100	5,000,000	6 cum	6 Q.	Feb., 1906
Niles-Bement-Pond preferred	106	106	.....		100	2,000,000		6 Q.	Mch., 1906
Otis Elevator Co	60	59	−1	March 19	100	6,350,300	6 n. c.	2 A.	Apr., 1905
Otis Elevator Co. preferred	103	103	.....		100	5,589,500		6 Q.	Jan., 1906
Pittsburg Coal Co	15½	15½	.....	Feb. 12	100	30,135,000	7	.....	
Pittsburg Coal preferred	55	56	+1		100	30,716,200	.....	.....	Apr., 1905
Pressed Steel Car	56⅛	52¾	−3⅜	Feb. 21	100	12,500,000	7 n. c.	3	Aug., 1904
Pressed Steel Car preferred	99	97½	−1½		100	12,500,000		7 Q.	Feb., 1906
Pullman Palace Car	239	240	+1	Oct. 18	100	74,000,000		8 Q.	Feb., 1906
Railway Steel Spring	56¾	56½	− ¼	March 1	100	13,500,000	7 cum	4 S. A.	Oct., 1905
Railway Steel Spring preferred	105	105	.....		100	13,500,000		7 Q.	Dec., 1905
Republic Iron & Steel	31⅞	29	−2⅞	Oct. 17	100	27,352,000	7 cum	.....	.....
Republic Iron & Steel preferred	105	102	− 3		100	20,852,000	5	7 Q.	Apr., 1906
Sloss-Sheffield	83¼	79⅛	−4⅛	March 14	100	7,500,000	7 n. c.	5	Jan., 1906
Sloss-Sheffield preferred	108	108	.....		100	6,700,000		7 Q.	Jan., 1906
Tennessee Coal & Iron	156	149¼	−6¾	May 15	100	22,552,800		4 Q.	Jan., 1906
U. S. Cast Iron Pipe & Foundry	48	46	−2	June 27	100	12,500,000	7 n. c.	2	Jan., 1906
U. S. Cast Iron Pipe & Foundry preferred	92½	92	−½		100	12,500,000		7	Feb., 1906
U. S. Steel	42⅝	40¾	−1⅞	April 16	100	508,302,500	7 cum	.....	Dec., 1903
U. S. Steel preferred	107	106	−1		100	360,281,100	5	7 Q.	Feb., 1906
U. S. Steel 5's	99	98⅝	−⅛		100	463,798,000		5 A.	
Virginia Iron, Coal & Coke	49½	45½	−4	Sept. 18	100	8,641,600	10	.....	.....
Westinghouse Electric	161	160	−1	June 27	50	20,996,350	20	10 Q.	Jan., 1906
Westinghouse Air Brake	155¼	155	− ¼	Oct. 2	50	10,990,450		20 Q.	Jan., 1906

FINANCIAL NOTES.

Estimates place the earnings of the Steel Corporation for the current quarter in the neighborhood of $36,000,000. This is almost ten millions in excess of the best previous first quarter, that of 1902. Proxies for the annual stockholders' meeting on April 16, are solicited by J. P. Morgan, H. C. Frick, E. H. Gary, N. B. Ream and N. Thayer.

Recent dividend declarations include the following: American Can Co., regular quarterly on preferred, 1¼ per cent, payable April 2; Cambria Iron Co., regular semi-annual, 2 per cent, payable April 2; Railway Steel Spring Co., regular semi-annual, common, 2 per cent, payable April 3.

The American Tool Works Co. has bought in $25,000 of the outstanding issue of its preferred stock.

C. Elliot & Co., 95 Liberty street, New York, has admitted Nils Anderson, formerly of Mathew Addy & Co., to the firm, and has changed the firm name to Elliot, Debevoise & Anderson.

NEWS FROM MANY INDUSTRIES.

New Buyers:—

The Standard Boiler & Plate Co., Niles, O., has been incorporated with a capital stock of $100,000. The officers are as follows: W. A. Thomas, president; C. T. Swaney, vice president; D. J. Finey, secretary and treasurer, and E. A. Gilbert, manager.

The Medina Foundry Co., Medina, O., has been incorporated with a capital stock of $25,000. The incorporators are: T. E. Henry, O. C. Scheible, W. H. Hobart, C. J. Miller and L. M. Matz.

The Holden Machinery & Supply Co., Denver, Colo., has been incorporated with a capital stock of $20,000. The incorporators are: George H. Holden, L. K. Holden and Thomas K. Holden.

The Torbett & Germond Co., Waco, Tex., has been incorporated with a capital stock of $25,000 to manufacture and sell metal sheet goods. The incorporators are: W. C. Torbett, Geo. F. Germond and R. L. Hollon.

The Markham-Brown Iron Works, Syracuse, N. Y., has been incorporated with a capital stock of $100,000, to manufacture and deal in iron, steel, etc. The incorporators are: Clarence I. Markham, Ernest R. Markham and William H. Brown.

The Aultman & Taylor Machinery Co., Mansfield, O., has increased its capital stock from $500,000 to $1,000,000.

The Peerless Foundry, Hamilton, O., has been incorporated for $25,000 by John Richard and S. H. Flum, F. M. Snook and Frank J. Baker.

The Mecklenburg Gas & Gasoline Engine Co., 299½ South St. Joseph street, South Bend, Ind., has been organized for manufacturing purposes by Clement Weis and A. C. Mecklenburg.

The Shade River Coal & Coke Co., Marietta, O., has been incorporated with a capital stock of $10,000. The incorporators are: Eugene Mackly, Charles S. Cameron, C. O. Cully, S. R. Sharp and J. W. Dailey.

The Canton Mfg. Co., Canton, O., has been incorporated with a capital stock of $25,000 to manufacture sheet metal, building material and specialties The incorporators are: A. T. Stone and M. F. Taylor.

The Novelty Foundry & Machine Works, Nashville, Tenn., has been incorporated with a capital stock of $35,000. The incorporators are: L. M. Shepherd, T. O. Perkins, J. A. Burton, E. H. Roy and A. P. Foster.

The Cherry Creek Iron Co., Cherry Creek, N. Y., has been incorporated with a capital stock of $30,000 The directors are: L. L. Smith, C. A. Mount, W. Oswell, H. E. Safford, F. H. Lapham, of Cherry Creek, and V. E. Peckham of Jamestown.

The Arthur Colton Co., Detroit, Mich., has been incorporated with a capital stock of $100,000, to manufacture and sell tools and machinery. The incorporators are: Arthur Colton, M. F. Colton, and Frank X. Roellinger.

The Whitney Iron Works, New Orleans, La., has increased its capital stock from $200,000 to $300,000.

The Canadian Ramapo Iron Co., Ltd. has been incorporated at Welland, Ont. with a capital of $300,000. The provisional directors are: Adam B. Mackey, Robert O. Mackay, John W. Nesbitt, John G. Gould and James Dickson.

The Oswego Boiler & Engine Co., Oswego, N. Y., has been incorporated with a capital stock of $150,000 to manufacture boilers, engines, tools, etc. The incorporators are: Charles S. Tomkinson, Plainfield, N. J.; Edward J. Mastoglic and James A. Nelson, 71 Wall street, New York.

The Holmberg Engineering Co., New Orleans, La., has been incorporated with a capital stock of $5,000 to manufacture all kinds of machinery. The officers are as follows: P. Holmberg, president; E. B. Marks, vice president and P. A. Lelong Jr., secretary and treasurer.

The Williams, Forrest Machine Co., South Bend, Ind., has been incorporated for $25,000 by T. H. Forrest, W. O. Williams and K. C. De Rhodes.

The Clinton Bridge & Iron Works, Clinton, Ia., has increased its capitalization from $50,000 to $500,000. Geo. E. Wilson Sr., is president and George E. Wilson Jr., secretary.

The Des Moines Bridge & Iron Co., Des Moines, Ia., has increased its capital stock from $150,000 to $200,000.

The Twentieth Century Rotary Engine Co., Hornellsville, N. Y., has been incorporated with a capital stock of $600,000 to manufacture engines, etc. The incorporators are: Alonzo C. Kinyon, No. 32 Genessee street, John R. Saunders and Frank H. Robinson, all of Hornellsville; and George A. Manning, of Campbell.

The American Electric Welding Co., New York, chartered with a capital stock of $500,000 will deal in machinery for the manufacture of metal apparatus. The incorporators are: Aaron Hecht, No. 92 Cliff street; Harry N. Salvage and Chester E. Mann, No. 68 Williams street, all of New York.

The Woodward Iron Co., which operates blast furnaces and coal and ore mines in the Birmingham district, Alabama, has filed notice of an increase in its capital stock from $2,000,000 to $3,000,000.

The Porcelantic Steel Tile Co., New York, incorporated with a capital stock of $10,000, will manufacture steel tiles, imitation marble, etc. The incorporators are: Max Raymond, No. 35 Central avenue, Staten Island; Felix M. Galley, No. 2179 Fifth avenue; Aaron I. Ralsman, No. 502 West 151st street, New York.

New Construction:—

The directors of the Lake Superior Corporation, in view of the increasing demand for their products and the satisfactory output of the steel rail mill at the Soo, have decided on immediate extensions of this plant. Plans have already been completed and contracts are being let for two open-hearth furnaces, and it is also contemplated to erect a battery of coke ovens, commencing with at least 50, with additions to be made later. No decision has been reached in regard to the addition of two blast furnaces, but the matter is now under consideration and will probably be dealt with at an early date. The January output of the rail mill exceeded 15,000, and the production of February was in the same proportion.

The Stamping & Tool Co., LaCrosse, Wis., has plans completed for a new building, 50 x 150 feet, the first story of stone and the second of brick construction. The equipment has been purchased. The company confines itself to the manufacture of dies, tools and special machinery.

The Bittenbender & Co., Scranton, Pa., for its proposed iron and steel mill, is planning the erection of a steel structure 100 x 200 feet, in addition to the four buildings which now comprise its plant. The mill will require five engines aggregating 840 horsepower, three double puddling furnaces, two heating furnaces, a 16-inch Belgian mill, a 12-inch mill with complete set of rolls, an 18-inch roughing mill, squeezer, shears and other equipment.

The Pennsylvania Bridge Co., Beaver Falls, Pa., has been awarded the contract for the construction of the second division shop for the Atlantic Coast Line, at Waycross, Ga. The cost is estimated at $400,000, and work is to be completed by the end of the year.

The Perry-Fay Mfg. Co., Elyria, O., has plans prepared for a factory build-

ing 50 x 200 feet with a wing 40 x 100 feet. Contracts will be let in the near future, and it is hoped to have the plant ready for operation by July 1. Equipment has been secured.

Gohmann Bros., Kahler & Co., stove manufacturers at New Albany, Ind., have purchased a site for a new foundry building which will be of brick 60 x 400 feet.

Charles Waltz, 466 East Seventeenth street, Oakland, Cal., has begun work on a structure 100 x 125 feet for the manufacture of safes and vaults.

The car factory which the St. Louis Southwestern Railway (Cotton Belt) is to erect at Pine Bluff, Ark., will be built by the W. D. Boyce Construction Co., of St. Louis. Preliminary work has been started on the buildings which will cost in the neighborhood of $200,000.

The Rundle Mfg. Co., Milwaukee, Wis., has set aside $50,000 for extensions to its plant. These will comprise an addition to the iron foundry 80 x 140 feet, a three-story addition 40 x 50 feet to its smelting and refining plant and a large addition to the office and warehouse.

The Crouse Tremaine Carbon Co., Fostoria, O., is preparing plans for a new plant. This will include a furnace room building 80 x 300 feet, and an adjoining building 50 x 180 feet for the milling, mixing and forcing departments. The buildings will be of fire-proof construction. The Osborn Engineering Co., Cleveland, is preparing the plans.

Friedenwald Bros., 214-218 North Holiday street, Baltimore, are preparing plans for a two-story addition to their plant 60 x 100 feet.

The Ashland Iron & Mining Co., Ashland, Ky., is rebuilding three stoves and one of its stacks at a cost of about $50,000. All contracts have been placed.

The new structure which the Bridgeport Foundry & Machine Co., Bridgeport, Conn., has under way is a machine shop 50 x 100 feet. The heavy tools will rest on a concrete floor and the light tools in the galleries, all electrically driven; a five-ton crane to run the entire length of the shop and a number of new tools will be added to the equipment. A general jobbing and machine business will be done.

The E. & C. Gurney Co., Toronto, Can., manufacturer of stove and heating apparatus, is to erect a large plant at Hamilton.

The plans of the Dominion Car Co. for the proposed plant in Montreal, west, include a building 150 x 600 feet in addition to the other structures necessary for the manufacture of cars. Considerable equipment has already been secured.

The Hendey Machine Co., Torrington, Conn., has practically completed its new shop building 80 x 110 feet, to which it will soon remove the machinery in its old plant. The old shop will then be removed and in its place further building will be done. The new building when completed will be 110 x 220 feet. Extensive additions to the foundry are already under way.

The Phoenix Fdy. Co., recently organized at St. Joseph, Mo. by Henry, William and Robert Blum and F. M. Atkinson, is having plans prepared for a foundry building 50 x 200 feet, which with equipment will cost in the neighborhood of $20,000. Robert Blum, who is a practical foundryman, will have charge of the plant.

J. B. Green, Des Moines, Ia., has purchased a site in that city on which he is planning the erection of a foundry to cost about $25,000.

The Scullin-Gallagher Iron & Steel Co., St. Louis, Mo., has purchased a 25-acre tract of ground adjoining its works in Cheltenham, for extensions to its plant.

The Chicago Hardware Fdy. Co., of Waukegan, Ill., is to erect a foundry building 65 x 100 feet at a cost of $12,000.

The J. Randall Co., Cincinnati, manufacturing leather making machinery, is having plans prepared for a four or five story building to be erected at Court street and Mound alley in that city.

Concerning improvements soon to be begun at the Minnequa plant of the Colorado Fuel & Iron Co., President F. J. Hearne has given out this statement: "We have decided to double our present soaking pit heating capacity at the rail mill together with necessary additions to buildings on gas producers. We have also decided to erect a modern calcining plant for the preparation of refractory material for the open-hearth department. We have arranged for the installation of six additional open-hearth steel furnaces of 50 tons capacity each, together with the necessary additions to buildings, gas producing plants, yard cranes and runways. Work will commence March 1 and will be completed within the year. These improvements will mean the expenditure of approximately $1,000,000."

General Industrial Notes:—

The Harbor Iron Works, 237 Olive avenue, Long Beach, Cal., in order to accomodate its growing business, intends to install considerable new machinery in the near future and provide improved facilities in securing metals and coke. E. P. Dewey is secretary and treasurer.

J. A. Engel & Co., Peoria, Ill., will be established by March 15 in the plant of the Peoria Steel & Tool Co., which they recently purchased. Their business in certain kinds of agricultural equipment has increased largely in the last year and forced their extension.

Simon Labold, cashier of the First National Bank, Portsmouth, O., has purchased the real estate and building of the Portsmouth Foundry & Machine Co. for $15,000. The equipment and patterns were shipped away some time ago, but the motive power arrangements remain in the building.

The plant of the Janney Mfg. Co., Ottumwa, Ia., has been sold to the proprietors of the American Milling Tool Co., which will occupy the plant.

The Otto Gas Engine Works, 33rd and Walnut streets, Philadelphia, Pa., is preparing to move its plant to Wilmington, Del., where a site of 50 acres has been secured on which substantial buildings will be erected. The Otto Co. operates a large plant at Cologne, Germany.

The C. H. Wheeler Condenser & Pump Co. has changed its corporate name of the C. H. Wheeler Mfg. Co.

The Jefferson furnace, Oak Hill, Jackson county, O., will probably go into blast again about the middle of the summer.

Southern ore and iron companies are again suffering for the want of cars. The Knoxville Iron Co., whose mines require 24 cars a day, states that recently it was furnished only 11 cars in two days.

The will of the late Samuel Thomas, Catasauqua, Pa., has been probated at Allentown. Newspaper estimates place the value of the estate in the neighborhood of $1,000,000.

The furnace of the Bessie Ferro-Silicon Iron Co., Columbus, O., is again in blast after being shut down a remarkably short time for relining.

The Fairbanks Steam Shovel Co., Marion, O., was recently incorporated under Ohio laws to surrender the So. Dakota charter. J. G. Fairbanks is president and general manager, R. M. Imbody, vice president, W. E. Scofield, secretary and R. C. McCollum, treasurer.

The blooming mill of the New York Steel & Wire Co., Astoria, N. Y., has been purchased by the Tremont Nail Co., West Wareham, Mass.

J. W. Sullivan, 384-385 South street, New York, has purchased what remains of the plant of the Morgan Iron Works, Chester, Pa., which he will occupy as a repair shop for vessels. His foundry at Ossining will be continued.

The Adjustable Axle Nut Co. has,

for $40,000, secured the premises lately occupied by the London Tool Co., London, Ont., and will at once begin operations there.

The Punxsutawney Foundry & Machine Co., Punxsutawney, Pa., recently incorporated for $150,000, has taken over the business and plant of the Novelty Iron Works and the Punxsutawney Machine Co. Both plants will be operated as heretofore, manufacturing mine cars, light locomotives, mine and mill supplies and doing general foundry work.

The American Tube & Stamping Co., Bridgeport, Conn., has chosen the following directors: Schuyler Merritt, Charles G. Sanford, Elwood Hendrick, Charles R. Wilmot, Wm. C. Coffin, C. D. S. Miller, E. P. Hincks, Frank C. Wilmot, Frank Miller, J. B. Cornwall and A. L. Ferguson. The officers are: F. A. Wilmot, president and treasurer; C. D. S. Miller, vice president; A. J. Middlebrook, secretary and assistant treasurer and Henry W. Hincks, assistant secretary.

The B furnace of the Londonderry Iron Mining Co., Ltd., Londonderry, N. S., has been dismantled after an idleness of several years. The Ferrona furnace of the Nova Scotia Steel & Iron Co., Ltd., has been abandoned and will probably also be dismantled.

Trade Notes:—

The 16 vertical blowing engines recently ordered by the Carnegie Steel Co. from the Allis-Chalmers Co., will be similar to others built by the Milwaukee concern, and now in use at various plants in the Pittsburg district. Seven pairs of these units will be installed at the Edgar Thomson furnaces, Braddock, Pa., and one pair at the Isabella furnaces, Sharpsburg, Pa. Eight of the engines will have steam cylinders 44 inches in diameter x 60 inches stroke and air cylinders 84 x 60 inches. The other units will be equipped with steam cylinders 84 inches x 60 inches and air cylinders 84 inches x 60 inches.

The Adrian Steel Casting Co., Adrian, Mich., is having such flourishing business that its force of workmen has been largely increased. Oil has been substituted for coke as fuel, largely increasing the number of heats possible each day, but the company is still behind on orders and will install four new furnaces.

The Laramie Rolling Mills, Laramie, Wyo., has begun operations under the direction of W. H. B. Jacobus, superintendent, and A. H. Fetters, mechanical engineer. Heavy orders have been booked from the Union Pacific.

The Frevert Machinery Co. has opened a salesroom and office at 18 Dey street, New York, carrying a complete line of new and second hand metal working tools and machinery. The company also manufactures a line of newly designed hand power traveling cranes, trolleys, hoists and overhead trucks. H. F. Frevert is at the head.

Fitz, Dana & Brown is the name of a new metal firm which has established offices and warehouse at 445-47 Pearl street, New York. The first two names are those of members of the Boston firm of Fitz, Dana & Co., the third member being Richard F. Brown, formerly with Phelps, Dodge & Co.

The Philadelphia Iron Works, Philadelphia, Pa., has secured the contract for the erection of two large self-supporting steel chimneys, 200 feet high and tapering from 18 to 12 feet, for the new power house of the West Jersey & Seashore railway to be erected at Westville, N. J.

TRADE PUBLICATIONS.

Wallach Bros., 57 Grace Church street, London, E. C., is distributing a catalog of safety appliances for use in coal mines and other dangerous places.

Allis-Chalmers Co., Milwaukee, has brought out two publications, entitled "Bullock Railway Generators for Direct Current," and "Machinery for Cement Making."

The Ingersoll-Rand Co., New York, has brought out catalog No. 45, describing the Sargeant rock drills. It is a handsome publication of 100 pages, and describes in detail the various forms of rock drills. The catalog is illustrated with photographs of the parts of the drills, and with views, showing the machine in use. A number of tables of dimensions are included in the catalog.

The Manufacturers' Foundry Co., Waterbury, Conn., has circulated a number of publications dealing with cylinder castings. One of these publications is a catalog consisting principally of photographs showing the company's plant with exterior and interior views, illustrating the process of making the castings. Another publication is a reprint of an article in a trade journal, describing the plant.

The Goulds Mfg. Co., Seneca Falls, N. Y., has brought out a catalog, describing the high pressure fire protection plant, installed at Coney Island, New York City. The installation here consists of three Goulds triplex double acting power pumps, directly connected to gas engines. The catalog contains illustrations of the pumping plant, gas-engines, pumps and of the fire streams thrown by the plant when in operation.

The National Machinery Co., Tiffin, Ohio, is distributing bulletin No. 10, describing the National single bolt cutters. A line of about half a dozen machines is decribed thoroughly and illustrated. Samples of the work which may be done are given, and the various parts are described in detail and illustrated, both by half tones and line drawings. The bulletin consists of 24 pages, the last five being occupied by tables of the dimensions of the various machines.

IMPORTS AND EXPORTS FOR JANUARY, 1906.

With but one or two exceptions the importation of iron products during January of 1906 shows a large increase over that of the corresponding period of 1905. The notable exception is in the instance of tin plates, terne plates and taggers tin imported from the United Kingdom in which case the figures, 7,905 gross tons with a valuation of $504,390 for 1905, correspond to 3,198 tons valued at $221,128 for 1906. Other comparisons show that there were imported in the first thirty-one days of 1906, 97,617 tons of iron ore, 25,657 tons of pig iron, 4,592 tons of bar iron, 2,446 tons of ingot, bloom and billet steel against 46,620, 8,804, 1,739 and 1,363 tons of the same materials respectively in 1905. The aggregate values of these products in each year show no great change in the prices of the imports.

Among the exports no particularly striking comparisons are apparent. The most noteworthy are 885 tons of iron ore exported in January, 1905, against 3,338 tons in 1906. The values of these exports, $2,927 and $7,321 respectively, show a slump in the value of ore for export in 1906. In the matter of pig iron the opposite is true according to the report of the department of commerce. In January, 1905, 10,458 tons, of pig iron were exported for the sum of $138,762 as compared with 4,787 tons in 1906 having a value of $85,538. The exports of the various forms of steel increased in amount in 1906 but with little relative change in value. Iron and steel sheets and plates were shipped in much larger quantities in 1906 than in the previous year, the figures being 284 tons against 747. Cut and wire nails approximately doubled in the matter of exports this year as compared with January of last year. This month's report instances a rather unusual condition where both the imports and exports of the same materials have increased.

The American Pig Iron Storage Warrant Co. reports for February as follows: amount on hand Jan. 31, 44,700 tons; February receipts, 2,900 tons; Deliveries, 12,300 tons; Balance on hand Feb. 28, 35,300 tons.